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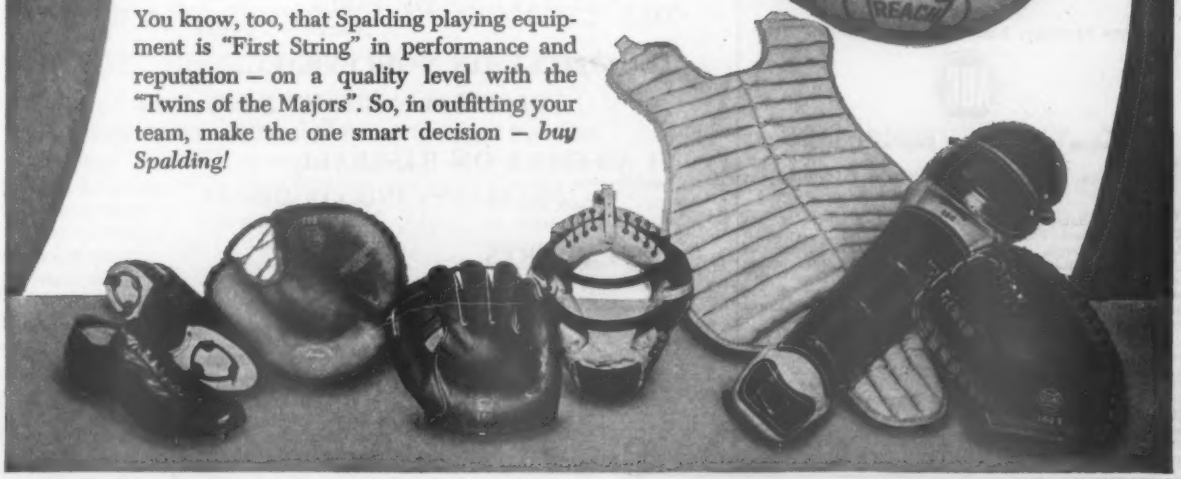

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This apparent stroboscopic photograph is in reality the high hurdle field in a dual meet between the University of North Carolina and the Camp Le Jeune Marines.

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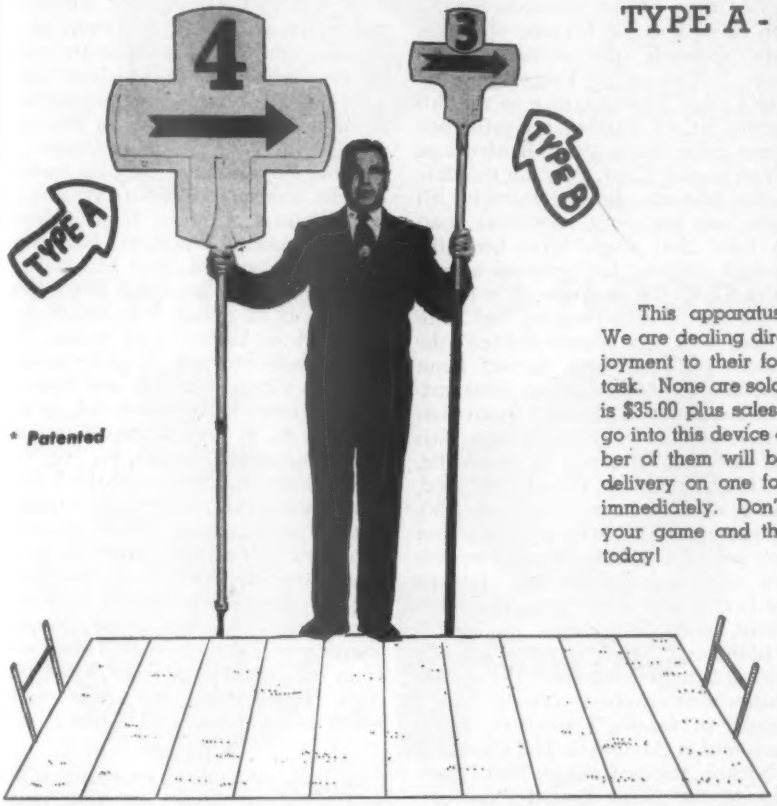

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from here and there

WHEN a small school, through an outstanding record, has a chance to compete with the larger schools in an NCAA tournament, and then turns it down because of a previous schedule commitment that's news . . . Last spring Fresno State received a bid to participate in the 8th District NCAA baseball playoffs, but a year prior coach Peter Beiden had agreed to play Calif. Poly. on the date of the playoffs. Beiden thought his honor was far more important than the fame that might have been his through guiding his team to a spot in the NCAA Tournament. You know, in this day of high pressure and accusations, we kinda admire Beiden's decision . . . Joe Tocci, former Penn State star and coach of his alma mater's freshman basketball team last winter, steps into scholastic ranks this year as basketball coach at Blairsville, Pa., High School . . . Chuck Gottfried, who graduated from Illinois in 1950, has had a taste of both collegiate and high school coaching in the two seasons since graduation. Last fall he was head coach at Urbana, Ill., High School, and this year is line coach at Idaho . . . At last summer's Colby College Coaching School, eight college coaches were enrolled; namely, "Buff" Donelli of Boston University; Barry Branon of St. Michael's; Hal Chalmers of Nichols Junior College; Nels Nitchman of the Coast Guard Academy; Harold Westerman of Maine; Joe Zabilski of Northeastern; Milt Piepul of Dartmouth and Bill Battles of Georgetown . . . Seventy-two schools have won or shared the football championship of the Western Conference and not one of these championships has ever been won by a team losing two games. As a matter of fact, in only fourteen instances has the championship been won with other than a no loss record. Of the fourteen times that teams with one loss won outright or shared the title, eleven have occurred in the last twenty years. Last year's Michigan team had the poorest overall record of any of the winning teams, with a 6-3-1 season . . . Mississippi has had twenty-four head football coaches through the years, but never had an alumnus as a coach . . . Oklahoma is considering a new setup for the state championship in football. Under the proposed plan, there will be two districts of AA schools, eight of A schools, sixteen of B schools and eight of C schools . . . Johnny Nordlander, newest member of Converse Rubber Company's staff of basketball representatives, once played a string of 280 consecutive pro games without a lapse . . . Al Zimmerman is assisting his former Illinois teammate, "Jocko" Wrenn, at East Moline, Illinois, High School. . . . Woody Woodson has compiled a record, in that his Hardin Simmons teams have not been held scoreless in 64 games. The streak goes way back to 1942 . . . In Texas, 727 schools will compete in girls' basketball this winter . . . Last year Florida added a new classification, AA, to the existing A, B and C classifications. Even that wasn't enough, for Joe Nelson's Seabreeze High School of Daytona Beach went right on winning state championships. After winning the Class B championship for three years, they won the Class A championship last spring. This makes Seabreeze the holder of the current longest winning streak for state titles and takes the crown away from Bob Quiring's Kalamazoo, Michigan team which has won three in a row.

• • •

A look at college coaching staffs will show an unusually high number of former teammates on the same staff, or the arrangement of tutor and former student. One of the most unusual arrangements exists at Arizona where we find that Art Badenoch, the Wildcat trainer, was Bob Winslow's high school coach 16 years ago at Inglewood, Calif. . . . The Minnesota State High School League conducted a survey among its member football coaches and came up with some very interesting statistics. The average coach has had only three years of coaching experience; he handles an average squad of 40 players; his teams play 7½ games on the average a season. Less than one-eighth of the coaches have spring practice and half of the coaches direct other than eleven-man teams, namely, six, seven or eight-man teams.

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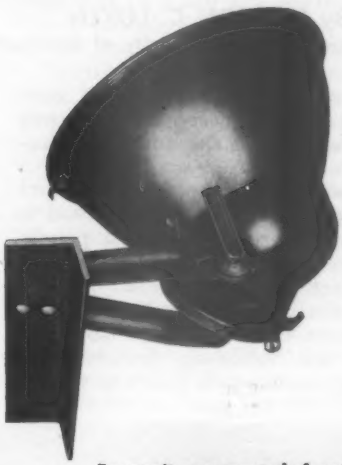
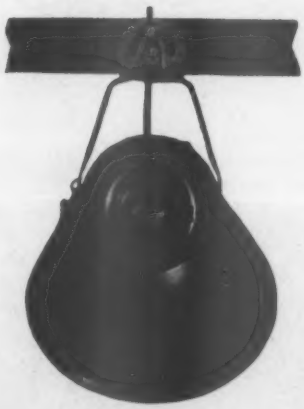


To permit easy removal of particles in case of lamp breakage, the reflector tips over completely. No tools required.

Exclusive L-69 features save time and effort in adjusting and servicing the light. Built-in wrench-type handle eliminates need for tools. Double clamping action holds against vibrations.



Relamping and cleaning is easy. Just flick hand toggle latches, clamp socket housing to trunnion bracket. Hands are free to service light, and reflector need not be disturbed for cleaning.

For many installations, floodlight can be aimed while the pole is on the ground with the aid of easy-to-read horizontal and vertical degree scales.

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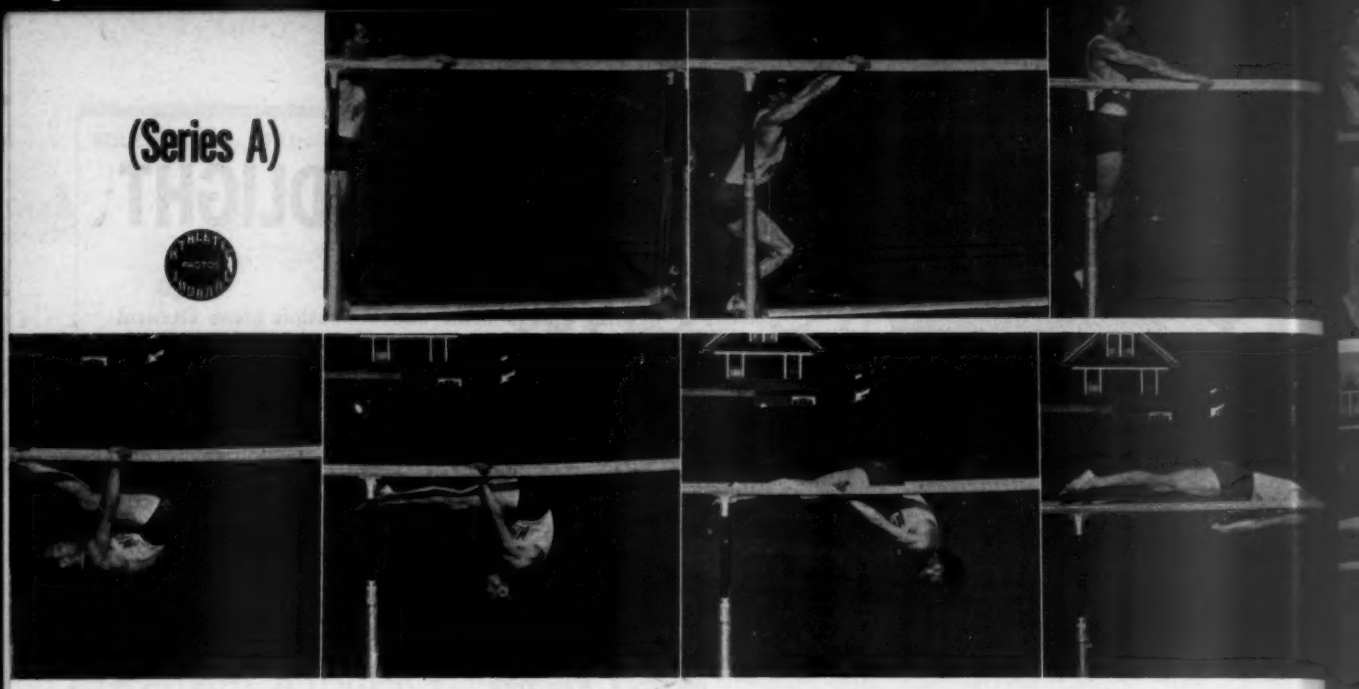
451-140

(Series A)



Advanced Stunts on the Parallel Bars

By NEWTON C. LOKEN
Gymnastics Coach, University of Michigan

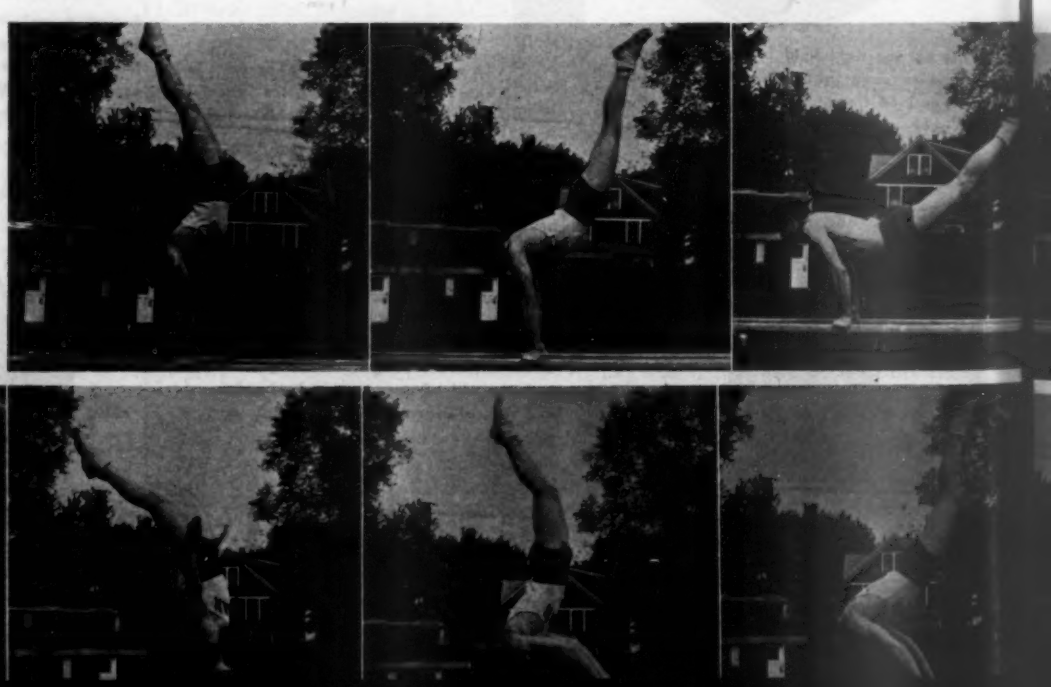
IN March of 1951 the NCAA Gymnastic Meet was held at the University of Michigan. During this time it was possible to observe very closely the parallel bar routines of some of the outstanding gymnasts in the country. In parallel bar work, as in the case of tumbling, much has been written within the past decade on the elementary and intermediate levels of the sport and very little on the advanced level. It is recognized that more individuals are concerned with the lower levels of skills, but there exists a definite need for more written material on the advanced phase of this activity.

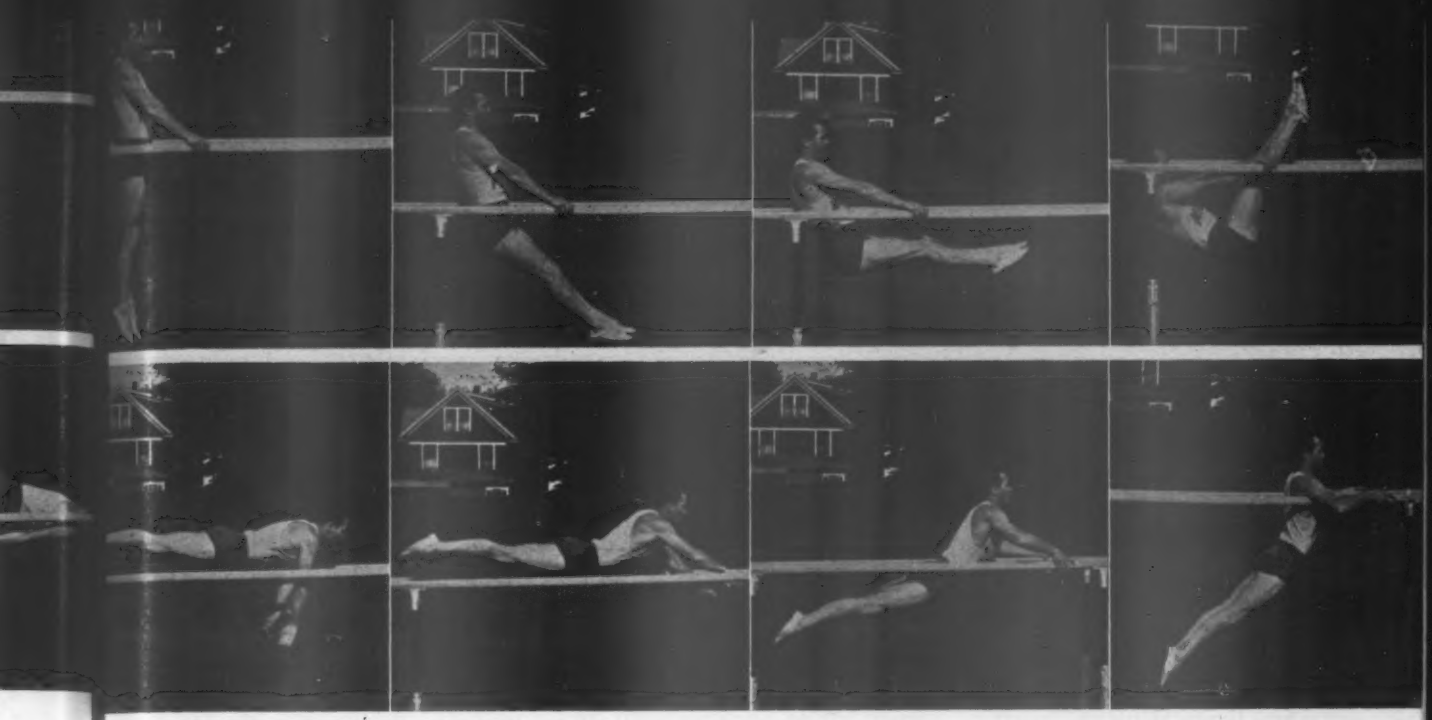
Coaches who are planning for their own gymnasts will be interested in the routines of the six best parallel bar men in the 1951 NCAA Gymnastic Meet.

J. Beckner of the University of Southern California won first place with the following routine: The mount was a peach basket to straight arm cross support, front over bar somersault to straight arm cross support, continue to handstand, back over bar somersault to handstand (hold), swing down to Stutzkehre, cast to back uprise to cut and catch, swing to partial handstand, drop back to upper arm position, back roll, shoot to momentary handstand and finish with front over bar somersault dismount.

Second place went to Joe Kotys of Kent State University who did the following routine: Peach basket mount

(Series B)





to straight arm cross support, swing to handstand, back over bar somersault to straight arm cross support, swing to to jump pirouette, cast to back uprise to cut and catch, swing to handstand (hold), swing down to Stutzkehre, then cast, back uprise with one-half twist to straight arm cross support, swing back to upper arms to gyro, (a back roll shoot with one-half turn), to back uprise, swing to front over bar somersault dismount with one-half twist.

Bill Roetzheim of Florida State University won third place and did the following: Front uprise to handstand, down swing and then front over bar somersault to straight arm cross support to handstand, back over bar somersault to straight arm cross support, swing to jump pirouette, to Stutzkehre into peach basket to straight arm cross support, then a drop kip into a back shoot (dislocate), continue with legs to a top kip position, top kip to handstand, then dismount with a back over bar somersault dismount.

Fourth place went to Joel Baba from Syracuse University who did: Peach basket mount to straight arm cross support, swing to handstand, back over bar somersault to straight arm cross support into swinging pirouette, Moore (almost layout position), handstand, down to front lever, drop to cast into back uprise, cut and catch to handstand, swinging dip to one-half turn with body in pike position with legs over bar (often called a pancake), into handstand, back over bar somersault dismount.

C. Koessian from Temple University won fifth place with the following: Front uprise to handstand, back over bar somersault to straight arm cross support, jump pirouette, Moore to L position of the body, into straight arm straight leg press to handstand, down to cast, back uprise with one-half twist to straight arm catch, swing back to upper arms to top kip position, back uprise, cut and catch to handstand, then front over bar dismount.

Sixth place went to Mel Stout from Michigan State who did: Jump into bars to upper arm cross support, then a big swing into back uprise to handstand, back over bar somersault to straight arm cross support, swinging pirouette, Stutzkehre, cast into cut and catch, drop to upper arms into gyro, back uprise, then swing to hand-

stand into back over bar somersault dismount.

The sequence action pictures of four stunts that are used quite frequently by our better gymnasts will be discussed in terms of coaching techniques.

(Series C)

Under Bar Somersault (Peach Basket) to Upper Arm Support Position

This stunt, shown in Series A, should be started from a standing position between the bars. The gymnast should jump into the air off both feet, and after reaching the top of his height, fall backwards with his arms straight and start to pike his body as is shown in Illustrations 5 and 6. When the body passes the bottom of the downward swing and starts up, it should be extended into an arch as is shown in Illustrations 10, 11 and 12, and at the same time the gymnast should pull with his hands. Upon releasing with the hands, the arms should be swung up in between and over the parallel bars, landing on the upper arms and allowing the body to swing forward naturally.

This stunt is a preliminary for the more advanced stunt of an under bar somersault to a straight arm cross support.

In doing this peach basket, the gymnast usually starts from on top of the bars in a straight arm cross support and then he falls backward into the stunt.

A technique of holding an arch with the body while starting to fall backward between the bars is advantageous. This delayed pike seems to shoot the body into a high peach basket.

Some points in doing the peach basket to a straight arm cross support are as follows: 1. The hips should be kept high throughout the stunt. They should not be permitted to drop too far backwards and below the bars.

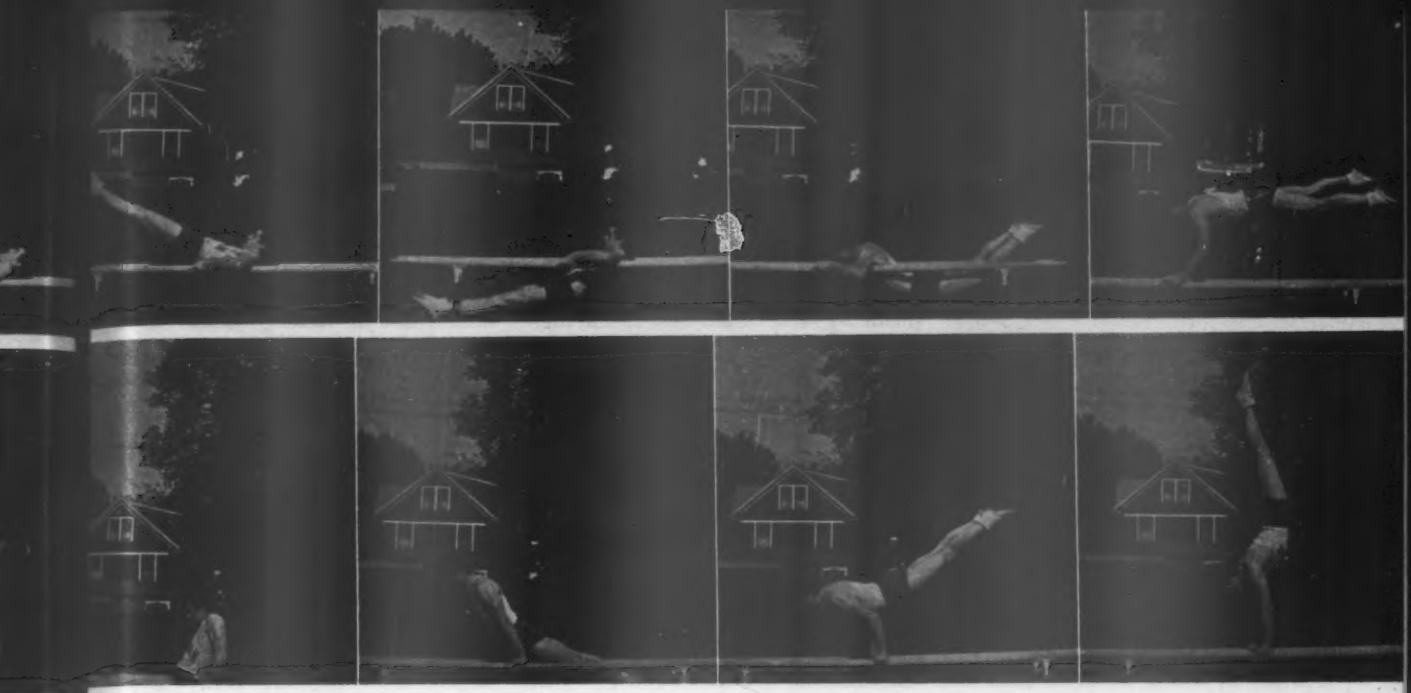
2. When underneath the bar, executing the last part of the stunt, the gymnast should be sure not to release his hands too soon. An early release of the hands causes the body to travel and prevents a neat looking straight arm catch.

3. The head and chest should continue to rise upward upon catching the bar with the hands. This makes for a smooth follow-through.

Back Over Bar Somersault to Catch to a Straight Arm Cross Support

This stunt, (Series B), is executed from a handstand as is shown in the pictures. Then the body is allowed to swing downward between the bars with a natural arch. This swing should

(Series D)



be free and easy, not tight or tense. The arms should be kept straight and the shoulders should be slightly forward of the hands.

After passing between the arms, the body in a slightly piked position, (Illustration 5), should extend to an arched position as is shown in Illustrations 7 and 8, with the head and shoulders extended backward. This is the key spot in the entire stunt. Here we must watch for a few faults which are as follows: 1. The gymnast should not lean forward or backward excessively. 2. He should not bend his arms. 3. The bars should not be released with the hands too soon. Rather, the gymnast should allow his hands to be pulled off by the momentum of the swing (Illustration 6).

After the hands are pulled from the bars, (Illustration 6), by the upward and backward momentum of the body, they should reach backward for the catch position as is shown in the last few illustrations. As soon as the gymnast catches the bars, he should allow his body to continue its natural swing and finish in the straight arm cross support position.

Some points on this stunt are as follows: 1. In learning the stunt it is recommended that an overhead safety belt be used. This eliminates many unnecessary bruises and jolts in learning the fundamentals. The overhead belt also overcomes fear of the stunt, and develops confidence which is so essential to the successful gymnast.

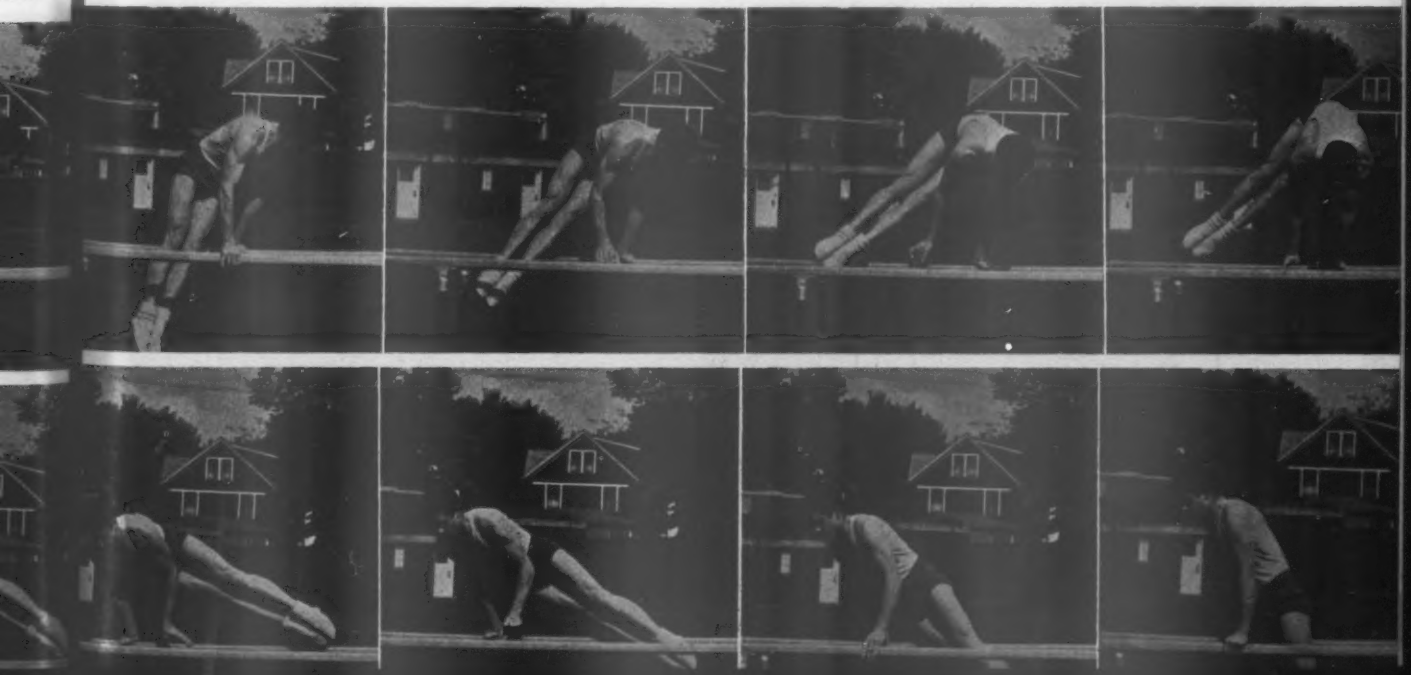
2. The next step in learning this stunt is to do it on the parallel bars after the bars have been lowered. The suggested height is several inches below the performer's armpits when he is standing on the mats between the bars. Then he may try the stunt, and if he does not land in a good catch position, he simply drops to a standing position between the bars without jarring or jolting his arms or shoulders.

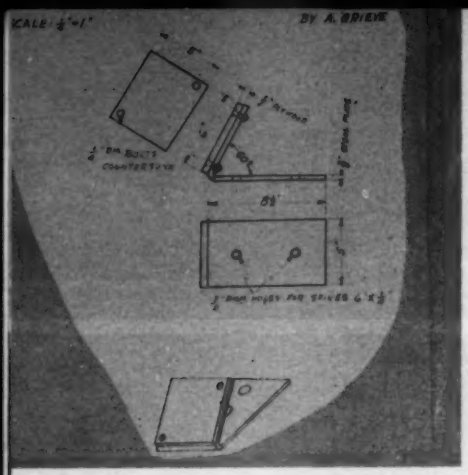
Finally, after the gymnast has proven that he can do the stunt successfully, he may raise the bars to the regulation height.

Back Uprise to a Cut and Catch and Swing to a Handstand

From a top kip position on the parallel bars (Illustration 1, Series C) the body is extended forward and upward

(Continued on page 50)





Make It Yourself

By ANDREW W. GRIEVE

Van Etten, New York, Central School

THERE are many types of equipment that a clever physical educator may make, or have made. Not only is this practice economical, but the physical educator understands more readily his own particular and peculiar needs. Several pieces of equipment which we have made are not available in sporting goods stores; but necessity, of course, is the mother of invention.

Undoubtedly other physical education men have had similar ideas and their homemade equipment has served them well. It is our belief that our ideas may well help others in the field and, conversely, their ideas would be of great assistance to us. Through the sharing of our innovations, we may improve the efficiency of our profession.

I made the equipment which will be described in this article, or it was made by some of the boys in the high school shop. Since this equipment was constructed entirely out of extra scraps of lumber, the comparative cost of most of the material which had to be purchased was negligible.

Storage Rack for Archery Bows

This storage rack places no strain on the bow or the string and will, therefore, not harm the equipment in any way. The diagram of the rack should be almost self-explanatory. Two of the parts might require an explanation—the wheel and the stove bolt. The stove bolt should have a long thread, since a nut must be placed well down on this thread. First, the bolt is put through a drilled hole in the center of the wheel. Then, a washer is placed on the bolt against the wheel and a nut is tightened on the bolt until the wheel will not turn. The end of the bolt is placed through the supporting arm and another nut is tightened over a washer at the top, leaving about 3 inches of the bolt showing between the wheel and the arm. With all the turning of the wheel, the top nut will not come off, since there is little pressure on it, and it will generally turn with the wheel.

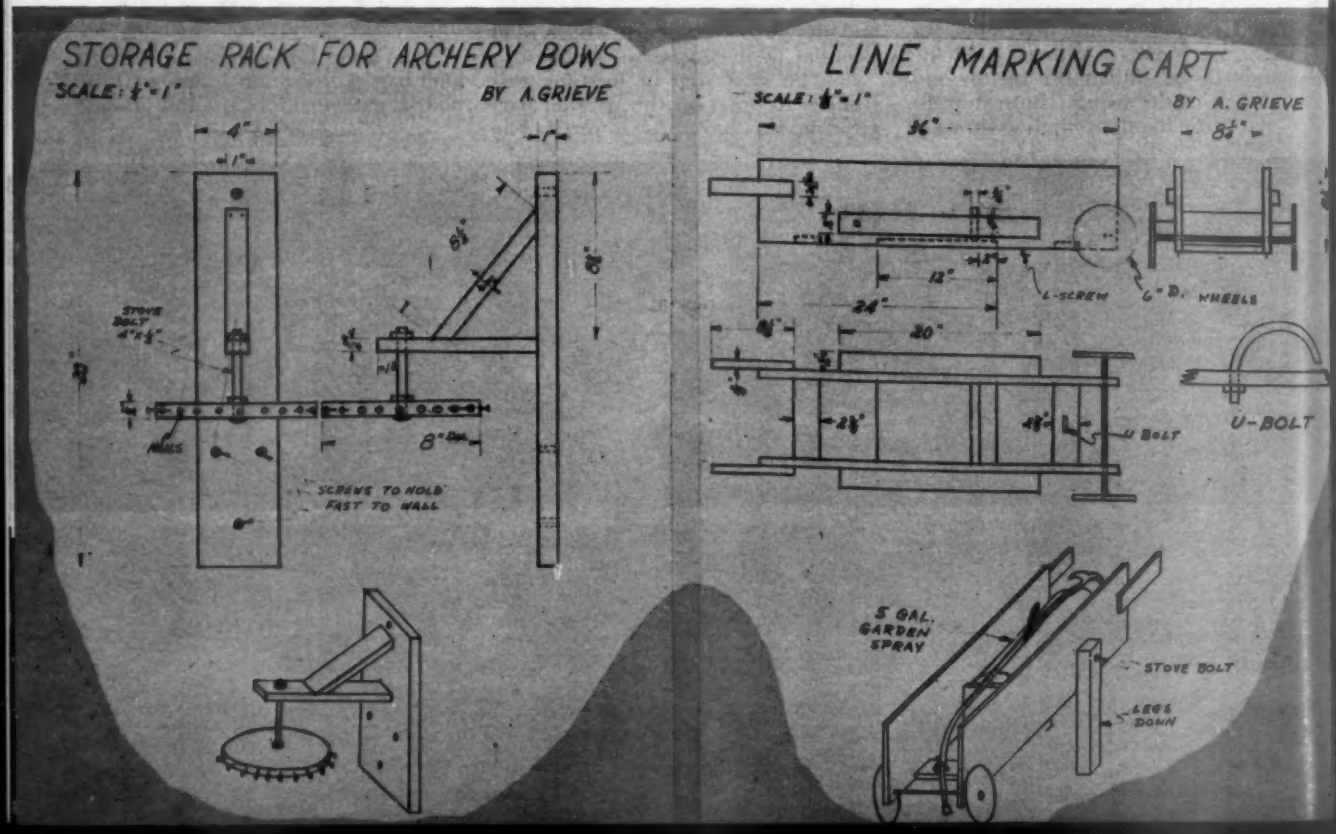
Around the edge of the wheel should be placed between 12 and 20 Number 6 common nails; this number being determined by the number of bows to be stored. About 1½ inches of each nail should be projecting, and the nails should not be too close to each other.

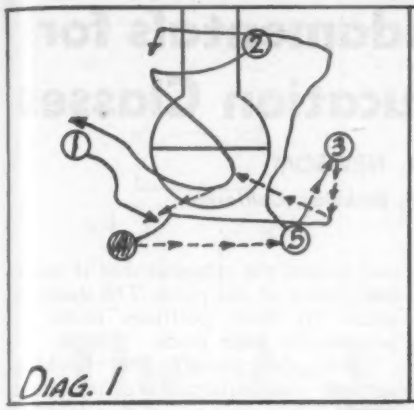
Tiny holes will be found at the top of the bows, through which string or thread may be placed. After a knot has been tied in the string or thread, the bows are ready to be hung on the rack. If the rack is placed high on a wall, bow storage which is both safe and space-saving will be provided. Naturally, any adjustments or changes required for a particular situation may be made; but this rack, as diagrammed, has served us well.

Starting Blocks

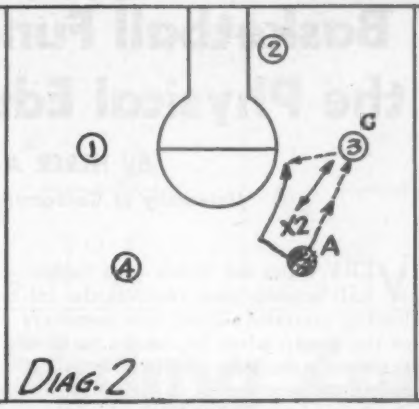
These blocks are far from elaborate, but are inexpensive, easy to make and they work efficiently. The main body

(Continued on page 52)





DIAG. 1



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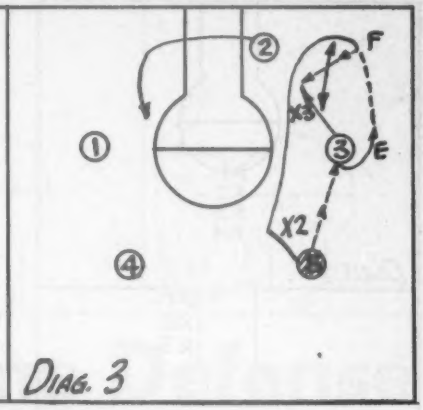

DIAG. 3

Zone Hysteria

By JOHN W. BUNN

Director of Athletics, Springfield College

WHY does the mention of the word "zone" in basketball circles generate so much heat and emotion? Is it because coaches honestly feel the zone defense is a detriment (like gambling) to the game and, therefore, anyone who uses it is unethical? At a recent New Jersey State High School Basketball Clinic, two or three righteous individuals vehemently proclaimed that anyone who used a zone defense was a "stinker." It was found that about half of those present used a zone defense and half used a man-for-man defense. More sober reflection revealed that each used his own particular defense because he thought it was most effective, or because he understood that type of defense best, or because it fitted his personnel or his court condition best. We doubt if any coach would refrain from using tactics which are perfectly legal and honorable under the rules, by inference, or by direct statement, if he thought such tactics would win games for him.

Then, is all this heat produced by those who do not use a zone because it makes ineffective their pet type of offense, forces them to prepare maneuvers which are different from their adopted plan of play and thus causes a certain amount of frustration? We are convinced that the answer to this question is "yes". The rapt attention which is paid to a presentation on "attacking the zone" at every coaching clinic, and the questions which are asked on this subject are ample proof of the concern which a zone defense causes so many coaches.

JOHN W. BUNN played under "Phog" Allen at Kansas and was his assistant for ten years. He then moved to Stanford where his teams won three Pacific Coast Championships. During his tenure at Stanford he was also dean of men. At Springfield College, John Bunn also serves as athletic director and is immediate past president of the National Association of Basketball Coaches. He is the author of "Basketball Methods" and "The Art of Basketball Officiating."

This article is intended to relieve this concern providing, of course, that coaches will follow the principles presented. But first, what usually takes place when a team faces a zone defense?

1. The players take set positions and spread out on the floor.
2. Players remain stationary except for very slight shifting to move more than one player into a zone where one player must guard two opponents.
3. The ball is passed around outside of the defense with lightning speed, in the hope of moving it faster than the defense can shift and thus get an opening for a good short shot.

These are exactly the tactics which a team employing a zone defense dreams about and prays that its opponent will employ. Such strategy falls right into the plan of the defense. It is the best known insurance for de-

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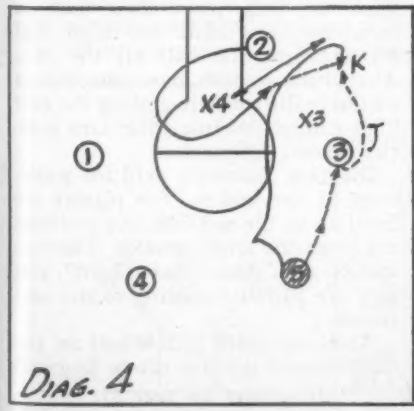

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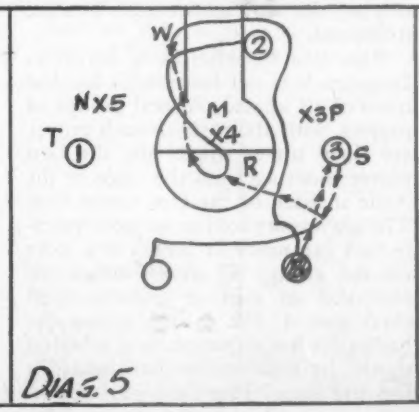

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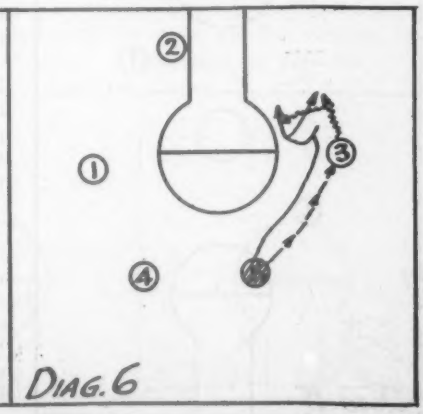
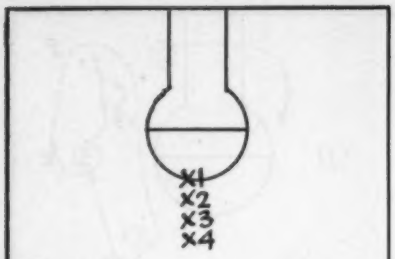


DIAG. 6

Basketball Fundamentals for the Physical Education Classes

By HEBER A. NEWSOM

University of California, Berkeley, California



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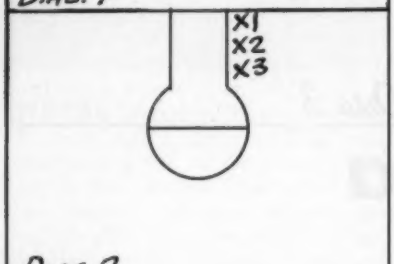

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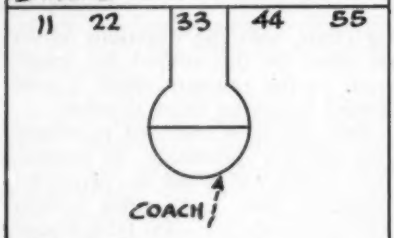

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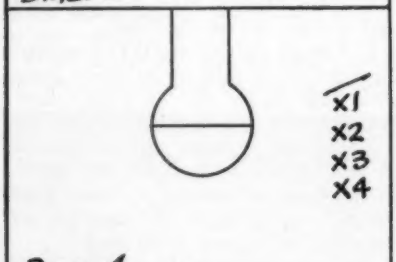

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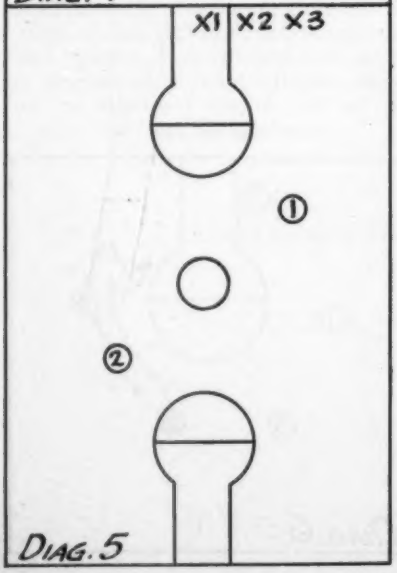

DIAG. 5

VERY often the coach of a basketball activity class receives the following comment from the members of the group when he desires to have the class spend ten or fifteen minutes on fundamentals or drills. "Say, we don't want any drills! We've had that! Let's have a game." One coach, knowing that fundamentals are good for the boys, makes them go through the drill, then he has a scrimmage. Another leader, following the path of least resistance, permits the boys to have a game right away. This man consoles himself with a rather questionable philosophy when he says to himself that the boys are having fun, no one is being injured and they are getting a reasonable amount of exercise. This situation may continue until instruction, as such, ceases to exist during the physical education period.

It is quite true that portions of the practice session period for the varsity are dull and monotonous because of the types of drills that are given day after day. A similar situation prevails in the basketball activity class. The players, following their natural urge, are desirous of new experiences — of something different. Are they not entitled to a change of diet? At least, may it not be presented in a different way?

Here are some drills that the students in the basketball activity classes at the University of California enjoy, and these same drills could be easily used with high school boys. Of course, they may be camouflaged as relays or competitive activities for, when the element of competition is brought into play, the boys immediately become interested.

This first exercise, as is shown in Diagram 1, is not new but it has lost none of its appeal. Several groups of players, with about six to each group, are lined up in single file, the first player shooting from the edge of the circle in back of the free throw line. The players are told to see how quickly they can make 21 points as a score for the group. X1 shoots either the one-hand set shot or the two-hand chest shot. If the shooter misses the basket, he has a chance for a rebound shot if he recovers the ball before it hits the floor. The field goal counts two points; the rebound shot if made has a value of one point. The shooters rotate in their positions until 21 points have been made.

Since the players are working against time, they have to shoot quickly. It is easy to see that this exercise constitutes good practice in shooting, rebounding and rapid passing.

Diagram 2 shows a rather simple test of co-ordination, but the instructor does not have to tell the boys the purpose of the drill. Several players take a position in front of the basket. X1 is stationed close to the basket, either on the right side or on the left side, depending on whether he is right-handed or left-handed. Other squads of boys are placed at the remaining available baskets. Contestants are instructed to try and make as many baskets as possible in one minute. The shooter receives a score of one when he makes a basket and he loses a point for each time he allows the ball to hit the floor. Total and individual scores of the group are compared with those of the other groups.

During this drill the coach stands in the middle of the floor with a stopwatch. He blows a whistle for the contestants to start, and at the end of one minute he blows the whistle again.

It is rather interesting for the experienced observer to compare the various players in regard to their knowledge of technique and method of execution. The more experienced and well co-ordinated players will bank the ball, leave their feet on each shot, not bank too high and avoid having the ball hit the rim. After thirty seconds, most competitors will have difficulty in getting the ball high enough because their arm muscles become fatigued.

Diagram 3 shows a drill for scrimmage at one basket. Ten players are lined up on the end line, and two boys are given the same number. The two squads are "skins" and "shirts" and they are paired according to size and ability.

Then the coach rolls a ball on the floor toward the free throw line and

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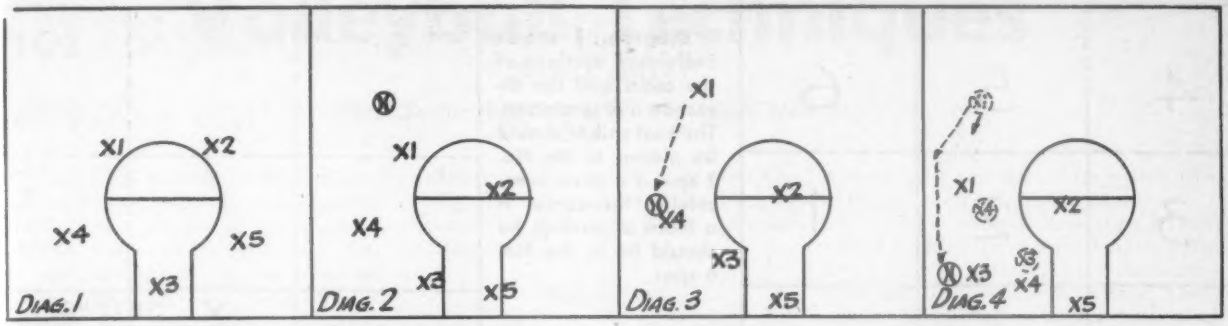


The 2-3 Sliding Zone Defense

By JAY McWILLIAMS

Basketball Coach, Alfred University, Alfred, New York

DURING the 1949-1950 basketball season only one of our opponents used a zone defense; the balance employed man-for-man defenses. However, during the 1950-1951 season five opposing teams used some form of zone defense.

At Alfred University we have been using a man-for-man as our basic defense and shifting into a 2-3 sliding zone as the situation called for such a change.

The present-day sliding zone defense differs greatly from the old territorial zone of previous years. In fact, after we used our 2-3 zone in a game one of the officials remarked, "I thought you used a zone defense but your team played a man-for-man defense throughout the game." In reality, it was actually a sliding zone in which each player had a definite change of position every time the ball was moved by the offensive team.

Just what are some of the advantages of the 2-3 sliding zone?

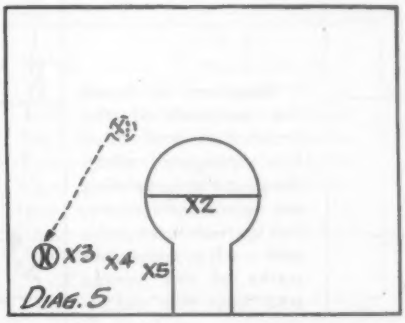
1. In the sliding zone defense if a player misses his slide he may be checked on it.

2. It provides the ideal rebound alignment. The three back line men are usually able to form a defensive triangle around the basket and take advantageous rebound positions. The two front line men watch for the long rebound and are in position to initiate the fast break.

3. It forces the opponents to take long shots.

4. It is an excellent fast break formation.

Ideally, the 2-3 sliding zone requires three big, agile men who are strong rebounders. These men are called



the *back line men.* The other two men are the *chasers* and speed and ball hawking ability are essential. Size is unimportant since the players may be small, medium, or tall men, providing they have the speed and quick reactions essential to the front line men.

One of the basic principles that should be remembered in utilizing this form of defense is to drive back on defense just as rapidly as is possible once the team has definitely lost possession. Our rule is to come back as fast as we can, then rest until the offense brings the ball into our front court. If all five men are not back in the basic setup, as is shown in Diagram 1, then the defense will not function properly.

Diagram 2 shows the positions taken by the defense when the ball is in the left front court. X1 does not get too close to the man with the ball, but will let this man shoot from the front court area as this is a low shooting percentage area. Of course, if this man starts to hit his shots from this area X1 will play him closer.

Diagram 3 shows the slide which is made by the defense when the offense moves the ball from the front court to the side court position. X1 should turn and face the ball. His primary responsibility here is to intercept a pass made back to his left front court area. X4 does not overguard, but plays a little closer on the point of the ball than X1 does when he is guarding against a possible set shot. X5 is stationed at the far corner of the backboard when this slide is completed.

Slide 3, as is shown in Diagram 4, is without a doubt the most difficult slide to make on this defense, and

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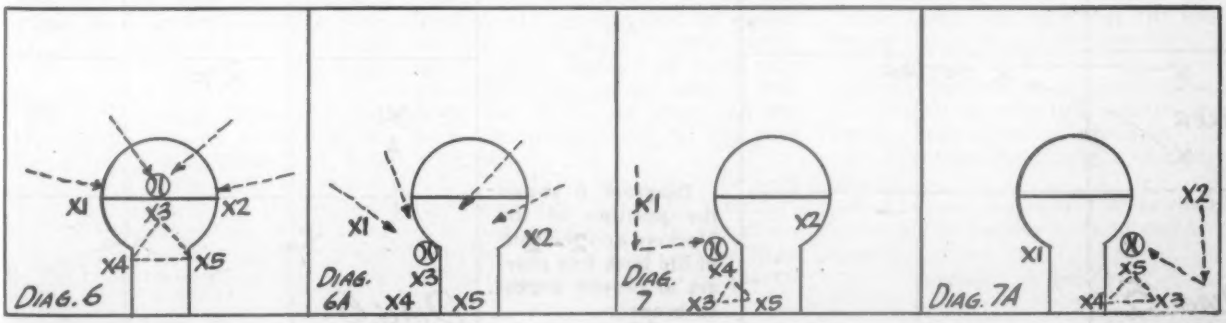


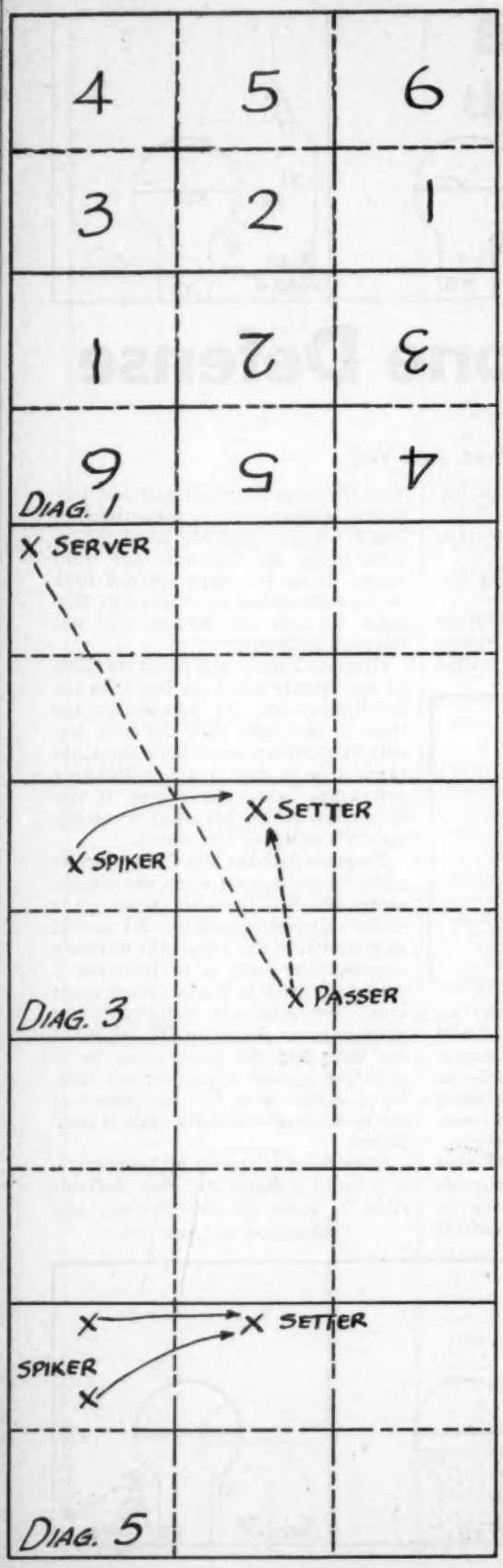


Diagram 1 shows individual sections of the court and the direction of rotation. The best spiker should be placed in the No. 1 spot if a team is receiving the serve. If a team is serving, he should be in the No. 6 spot.

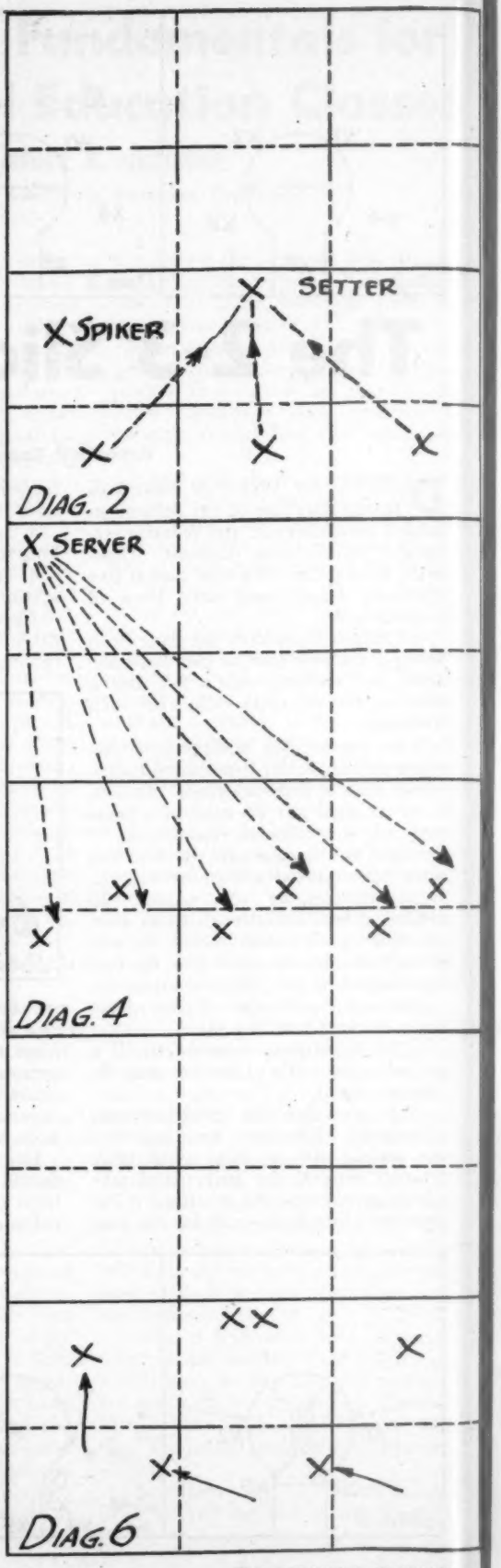
Diagram 2 shows the location of the setter and the spiker before a pass is made from the back line.

The position for a four-man drill to develop ball control is shown in Diagram 3.

Diagram 4 shows the position of the front line and back line players when they are receiving an opponent's serve. The dotted lines indicate the possible paths of the serves and how the defensive men are in position to receive them.

The path to be followed by the spiker is shown in Diagram 5.

Diagram 6 shows the position of the blockers and the shift of the back line players to protect exposed areas.



Volleyball Techniques

By E. J. LALLEY

North Senior High School, Binghampton, New York

GREATER success in high school volleyball may be achieved by stressing two phases of the game — position play and ball control. The set and the spike are the basic offensive techniques; the block and the retrieve are the basic defensive maneuvers. But improvement in all fundamentals may be achieved only through the correct position play of the six players on the court, and by the feathered touch on the ball which is the basis of control.

Position Play

The rules of volleyball divide each half of the court into six equal sections. Each player — both offensive and defensive — must be within the limits of his section when the ball is served (Diagram 1). Here the coach has a rule which is a help to him in teaching position play. It aids in impressing on the players that each one's primary responsibility is to protect his own section of the court. It will also help in preventing the boys from bunching up on the ball, interfering with each other and leaving vulnerable openings. This rule is an aid in ball control, as well, since a player needs room to maneuver in order to handle the ball properly.

Players should develop the habit of getting into position fast to play the ball. This is an essential step in achieving ball control. The alert boy has his hands up and his body balanced, ready to move in either direction.

Fault. Failure to get good "sets" is due to bad passes from the back line. A pass must be high and near enough to the setter so he may get to it and maneuver to face his spiker.

Offensive Position Play

On offense, it helps to have the setter near the middle of the court to receive his pass from the back line. He may move into this spot after the serve, if the rotation has moved him to the right hand end of the front line.

Before the volley, he must signal to his teammates with a raised hand, to let them know he receives the ball on the second pass to set for the spiker. There are two reasons for keeping him near the middle of the front line: 1. It is easier for the back line to get the first pass to him and the pass is a shorter one to make. 2. It gives the spiker more lateral space to maneuver around in if the set is not accurate (Diagram 2).

Ball Control

When the player is in position, he must follow certain techniques in playing the ball. If he has the light, feathered touch which comes from playing the ball with his finger tips, he is probably a "natural." Otherwise, long drills on ball control are the medium for developing this skill.

Points to Emphasize. 1. The ball should be contacted with the finger tips. 2. Players should cup their hands with fingers up. 3. The elbows should be out and flexed. 4. A player should face the receiver. 5. The knees should be kept slightly bent.

Drills. Passes should be zig zag between the lines of the players. 2. The boys should throw and pass. 3. Players should group around a basketball basket and tap the ball high and into the net for control and accuracy. 4. In circle passing, the players line up in circle formation, and keep the ball moving with a regular volleyball pass. 5. The boys should work in units of four to develop both position play and ball control (Diagram 3).

THE author of this article, E. J. Lalley, has been director of athletics since 1937 as well as baseball and volleyball coach. In the four years he has coached the latter sport his teams have won the league and Section Four titles for three years, no mean feat in volleyball-minded central New York.

Offense

Receiving the Serve. 1. The two lines should be staggered to receive an opponent's serve. Every player should take a position where he may get a clear view of the server. The front line leaves the gaps and the back line players plug in the gaps (Diagram 4).

2. The front line should be kept just ahead of the back edge boundary of its court positions. This places the front line between 10 and 15 feet from the net (Diagram 4). The players should pull the back line up to the center of their court positions.

3. Players should have their hands raised slightly above waist height, with their fingers pointing up. Anticipation and alertness are important. Each player should expect the serve to come to him.

4. The front line must handle balls that barely clear the net, while the back line drops back for balls that are hit deep.

5. Teamwork must be learned and is similar to that developed by outfielders in baseball when a ball is hit between them. A high school player is apt to start for a drive, then see a teammate start also. Then both players step back and let the ball drop. The player in the best position must give a prompt call, "I've got it." Otherwise, a player should not start after a ball and then stop. It should be pointed out that even if the players collide, usually one may get enough power behind the ball to get it up in the air. It demoralizes a team to have the ball drop to the floor without a play.

The Pass up from the Back Line. This is the secret of getting good sets. In this pass, the back line passer must execute these maneuvers:

1. Get the ball high in the air.

2. Pass to the side of the setter toward the spiker. This gives the setter a chance to come in on the ball.

3. Ball control is important here. Most setters are more accurate if they get the ball close to the net. The back line has to kill the speed of an opponent's serve or spike and get the pass off with accuracy. Constant practice of this fundamental and its correct use in competition are steps toward improvement.

The Spike. This maneuver combines a jump for height with hitting the ball at the height of the jump. Since there are two skills involved, they should be worked on separately.

The Jump. In the jump, the following points should be observed:

1. The run should be kept at a minimum, not over three or four steps.

2. Players should run parallel to the net, or in an arc (Diagram 5).

3. The boys should use a two-foot take-off.

4. The end run should be as close to the net as possible without contact resulting.

(Continued on page 46)

The Small Weight Man

By KENNETH D. MILLER
Track Coach, Florida State University

Illustration 1. The recommended initial stance just prior to beginning the first pivot. The left foot step-back coincides with the full backward swing of the throwing arm.

ONE rosy dream common to all track coaches, is that of being blessed annually with big, strong, fast weight men. However, since athletes of this exacting category are an unusual occurrence in the population distribution, the more common situation in the typical high school is for the coach to find either large, slow boys, or average-sized, strong boys turning out for the shot put and discus throw. In the secondary school age range, the big lad with slow reaction time and slow reflex time is of little use in these events, but the average-sized candidate possessing above-average strength may prove to be a representative performer in the weights.

While the discus and the shot put are generally considered to be strength events, the actual physical quality needed for successful performance is defined more precisely by the term power. This may be described roughly as a combination of strength and speed of muscular contraction. The former factor in this synthesis normally receives the most attention from high school coaches because, from the point of view of these men, strength is clear-cut. It is a concept which is readily adaptable to measurement, and, comparatively, a boy at any particular time is either strong or he isn't. Speed of muscular contraction, the other element in the makeup of power, while certainly appreciated by most coaches, is usually mentally sidetracked as being entirely an innate factor, and, consequently, one to be largely disregarded in the coaching procedures employed.

The small man — that is, the average-sized athlete — who turns out as a candidate for the weights normally has a fairly high degree of power. If he were not fast, he would have an experience background of little success in competing with larger boys in strength contests. The fact that he is striving for a team berth in the shot and discus events implies that he has been successful in strength rivalry with his contemporaries. The adolescent is interested in doing what he does well, and shuns participation in activities in which he feels insecure. Since the type in question has an above average degree of this speed factor, and since he lacks the size for large muscle mass and its accompanying strength, the sensible procedure in the coaching of this boy is to work toward the most effective utilization of his natural speed.

KENNETH MILLER graduated from Oregon where he had the honor of being selected as a half-miler on the all-time University team. Following graduation, he served as assistant track coach at his alma mater for one year before beginning a coaching career in California high schools. During the war Miller served in the V5 program and as an aviator. From 1946 to 1948 he was track coach and assistant basketball coach at Lock Haven (Pa.) Teachers College. Since 1948 he has been at Florida State.

In working with the light, strong weight man, the major emphasis must continually be on *speed*. Every phase of the throwing technique must be predicated upon this concept, and the candidate for these events should be strongly indoctrinated with the understanding that the essential aim of all his practice in throwing the discus or putting the shot is to achieve maximum velocity at the instant of release. The force which gives impetus to a shot or a discus is a product of mass and velocity, in which velocity provides most of the result.

The Discus Throw

The discus throw is an extremely complicated co-ordination, and this fact has led most coaches to the practice of teaching its technique through a process of breaking the event down into distinct, separate phases, namely, stance, pivots, delivery, release, etc. Such procedure undoubtedly makes the teaching effort seem easier, but this misconception may actually impede progress toward the whole learning involved. Since with the small candidate the object is to strive for rapid acceleration and the achievement of maximum velocity, the timing and co-ordination necessary for this overall goal are far more important than the mastery of isolated bits of technique as such.

With the beginner, of course, certain elementary functions must be introduced. He must acquire a comfortable grasp; adopt an effective stance; strengthen his fingers, wrist, and forearm; and spend long hours learning to sail the discus. Aside from these fundamentals, however, the coach should stress the procedure of getting from the initial stance to a balanced recovery after the throw, as a single, smoothly co-ordinated movement.

Many different initial stances have been used successfully by outstanding discus men. Since the light man must depend largely upon speed for the distance of his throw, and since this velocity must be achieved during the travel across the circle, it is recommended that this type of athlete face directly away from the throwing direction in his initial stance (Illustration 1). This position provides an extra

Illustration 2. A 170 pound discus thrower just after the release. Note the follow-through, hip lead, open stance, straight line-of-force, and feet-on-the-ground position.

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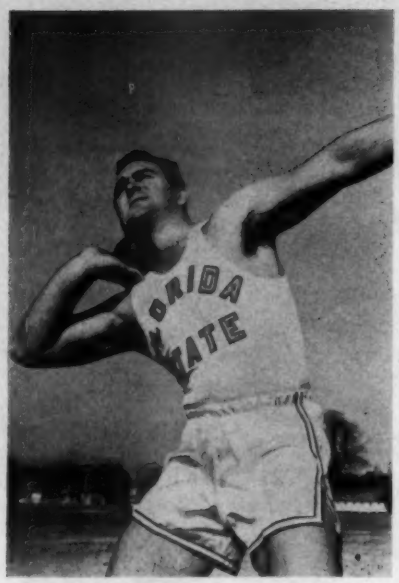

Illustration 3. The starting stance and hand hold must be adapted to the athlete. This three-quarter forward facing position is recommended for the light shot putter.

quarter-turn for acceleration, and also aids in increasing speed by minimizing the mental hazard of fouling through providing a more economical use of the circle during the spin.

The actual spin and movement across the circle may be made advantageously by either of the standard forms commonly used by present-day champions. The essential problems of the lightweight thrower in connection with the spin are concerned with speed and arm drag. Rapid acceleration must take place, and the throwing arm must drag behind the shoulder which, in turn, is led by the hip. The resulting double whip action provides an invaluable assist during the delivery.

Beginners should perhaps be taught the pivot turn first, due to the fact that the required co-ordination is somewhat simpler than that used in the jump turn. Either form is effective, however, and the primary concern of the small thrower is to get from the initial stance to the throwing position as rapidly as possible. If a boy is able to accomplish this aim more efficiently with one style than with another, the expedient method for him to use is obvious despite any preconceived opinions of the coach or the athlete. As with any motor skill, the specific technique employed is highly irrelevant in terms of what works best. Performance is the only logical criterion of ability.

The most important single phase in the unbroken pattern of the whole effort is the throwing position, and at this point the small, fast man is prone to one, or both, of two major faults. The first of these is the error of starting the actual throw before the most efficient delivery position is reached (Illustration 2). It is imperative that the throw be made from an open stance with both feet firmly planted on the ground, yet with the light beginner the continual and necessary emphasis on speed frequently results in the timing error of throwing too soon.

The second of these commonly found errors is that of reversing before the release, which results in the throw being made with the feet off the ground. Again, this is a serious timing fault apparently stemming from the small man's realization of the need for speed, and it is a deviation which must be eliminated for good performance.

If the lightweight discus thrower were to adopt a slogan, he could find no more appropriate one than the World War II reservist's popular description of service routine: "hurry up and wait!" The complex technique of throwing a discus well is a smoothly co-ordinated pattern of movement in which each phase must be carried through to completion before another is begun.

With the beginner, the coach should not place undue emphasis on the reverse. The movement is merely a method of maintaining balance in order to avoid fouling, and since it serves no useful purpose in making the actual throw, the athlete should not be burdened with this addition to the complicated co-ordination he must learn through necessity. Some type of reverse is a natural reaction for most discus men, but it is not important if the thrower is able to maintain his balance in other ways. In any event, whatever movement is used to avoid fouling, it must definitely follow the release.

Illustration 5. Brick Bradford, 175 pound Dixie Conference shot put record holder, demonstrates the approved follow-through. Note the wrist and finger snap, straight arm, complete follow-through and balanced recovery.

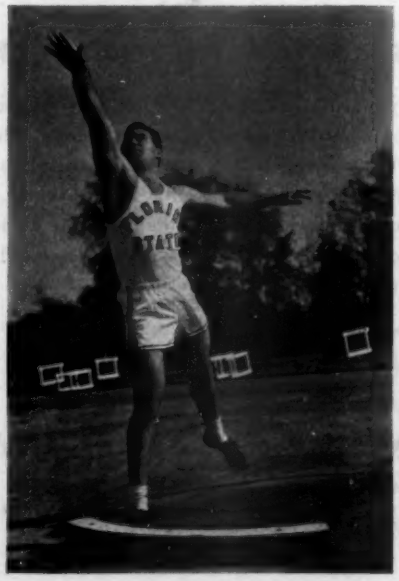

Illustration 4. This picture of a 167 pound college weight man shows the straight line-of-force drive from ground to shot.

The Shot Put

As in the discus throw, the small, strong man may be a successful performer with the shot if he is the fortunate possessor of above average speed of muscular contraction, and if he can learn to use this advantageous innate physical characteristic to near maximum efficiency.

In teaching the shot put, as in teaching the discus, there is a common practice of presenting the effort as a series of distinct and relatively isolated skills. In spite of the prevalence of such methods, more effective teaching results when the event is considered as a single co-ordination from initial stance to release. The small man's only hope in this event is to learn to build up momentum rapidly, and since the distance of travel across the circle is short, the importance of achieving a concept in which the whole movement is considered merely a constant, uninterrupted acceleration, becomes indispensable.

(Continued on page 48)

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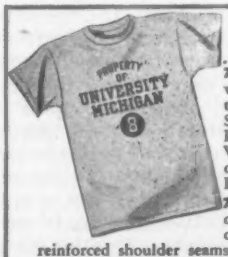

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SURVEY OF TRACK AND F

OF the many questions submitted to our office and to our information editors, those dealing with track and field facilities are by far the most numerous. In an effort to answer these questions scientifically, and to present information which will be of help to those interested in the sport of track and field, it was decided to prepare a questionnaire. Three major track coaches were asked to submit questions they felt should be included in a questionnaire of this type. From their answers and from the inquiries received in our office and the office of the Athletic Institute, a three-page questionnaire containing 34 questions was prepared and mailed to college track coaches picked at random from the United States and Canada. The size of the schools was not considered; the only fact considered was that the school had track. From this number, 177 replies were received, a return of 58 per cent, indicating how valuable the track coaches themselves considered the information. One track coach suggested that the results be printed in the rule book; another stated, "I am very glad you are assembling this material. It will be very useful to all of us." Another track coach stated they were building a new track this spring and were awaiting the results of the survey.

A number of coaches pointed out that different climatic conditions in various sections affected the construction of tracks. For example, a coach from Kansas stated their greatest problem was a surfacing material that would not blow away with the Kansas dust storms. Another coach pointed out that in the more arid regions of the country they had to be less concerned with drainage. This factor would affect the construction of their tracks. With these comments in mind, we arbitrarily divided the country into four sections. In the East we placed those states east of Ohio and north of the Mason Dixon line. In the South are to be found the generally recognized southern states, plus the states of Arkansas, Oklahoma and Texas. In the Middle West are the states from Ohio on the east to the Mountain states on the west and north of the Mason Dixon line. The Western section comprises the Mountain states and the three Pacific Coast states.

To the coaches who took the time and trouble to answer this questionnaire, our sincere thanks and appreciation. The questionnaire is divided into four major sections; track construction, field events, maintenance and questions of a general nature.

Track Construction

1. *What should the radius of the curves be?* The suggested track layout in the track rules calls for a radius of 104.04 feet or 120 yards for the length of the arc. Thirty per cent of the replies on the questionnaires agreed with the rules book. Twelve and one-half per cent wanted a shorter radius, and the remaining 57.5 per cent wanted a longer radius. Six per cent wanted a radius less than 100 feet and 13.7 per cent wanted a radius longer than 110 feet. The average radius desired by those answering this question from within the Middle West area was 106.4 feet; for the West 106.6; for the South 107.0 and for the East 110.1 feet. One Eastern coach stated, "Theoretically the speed of the track increases with the radius — the radius should be 120 to 130 feet. Another Eastern coach amplified the question by stating that the radius depended upon whether the conference ran the lows, 440 and 880 out of a chute. If not, he preferred the regulation radius. If the chute were used, a shorter radius could be employed.

2. *How high and wide should the curbs be?* The rules suggest a curbing extending 4 inches above the track, and no mention is made of the width of the curbing. Only 40 per cent of the coaches answering the questionnaire favored a curb as high or higher than the rules suggested. The average height for the entire country is 3.3 inches. The West was closest to the suggested height with a 3.6 inch average. The Middle West average was 3.3; the South 3.1 and the East 3 inches even. Two Eastern coaches wanted the curbing flush with the top of the track.

There was also close agreement on the width of the curb. The average for the country was 4.3 inches. The sectional averages were South 4.0; East 4.1; Middle West 4.4 and West 4.5 inches. The rules state that the curbing should be rounded on the top and several coaches indicated this fact. One coach suggested a slanting curb, with the slant away from the track. It would seem that a curbing between 3 and 4 inches high and between 4 and 5 inches wide is the most desirable.

3. *What material makes the most ideal curb?* The rule book suggests a concrete curbing, and this was practically the unanimous choice of the coaches. One hundred and forty-three coaches answered this question and 129 specified concrete. Seven preferred wood, six desired steel and one indicated rubber was the most ideal material for the curbing. Three schools recommended old railroad rails.

4. *Should the track slope slightly away from the curb?* The coaches were almost evenly divided on this question; 44 per cent feeling there should be a slight slope and 56 per cent feeling that the track should be level. One Western coach said it depended upon climatic conditions. If there were wet springs the track should slope to the outside. Another coach said if there were drainage tiles along the inside, the track should be level; otherwise there should be a slope to the outside. The Middle West, by the narrowest margin, favored a slope, while the other sections were opposed to it. The South was the least in favor of a slight slope, only 35 per cent favoring it.

5. *What is the ideal depth of excavation for the track?* Seventeen coaches were quick to point out that the depth of excavation depended upon climatic conditions, and the nature of the soil itself. Several mentioned the necessity of going below the frost line, while a number said the depth of excavation depended upon the amount of rainfall and the porosity of the soil. Four coaches recommended that the bottom of the excavation slope from the outside to drains under the curb. A Western coach writes that in his immediate locality the soil is largely clay and adobe, and the excavation must be 2 feet deep, in order to substitute a more porous material for the clay. A coach from Michigan writes that due to the sandy nature of their soil no artificial drainage is necessary and the excavation is only 5 inches. Keeping in mind that local soil and climatic conditions should govern the depth of excavation; never-

theless, there is a surprising amount of uniformity among the four sections. The average depth for the East is 23 inches; for the West 22 inches; for the Middle West 20.4 inches and for the South 19.5 inches, with the average depth for the country just under 21 inches.

6. *How many inches of rough cinders should be put in the lower stratum?* Here we have a fairly wide divergence of opinion, ranging from an average of 6 inches in the South to an average of 10½ inches in the Middle West. The Western states averaged 8 inches and the Eastern states 9.4 inches. Here again, the importance of climate is clearly evident. Some coaches pointed out that bricks, slag and coarse rock were preferred to cinders. A west coast coach points out that in his locality cinders are hard to secure, and with the growing use of diesel engines the problem will become more acute. A North Carolina coach points out that the lower part of their track is composed of 4 inches of stones, 3 inches in diameter and on top of that 4 inches of clinker cinders. A Middle Western coach points out that there should be 12 inches of rough fill in the lower stratum when the subsoil is clay and 6 inches when the subsoil is sandy and stony. Four of the Western coaches felt the rainfall should be the deciding factor in the depth of the rough fill.

7. *Should the under bed (rocks, coarse cinders, etc.) be rolled with a heavy roller?* The questionnaire showed that three-fourths of the coaches favored a heavy rolling, with the Middle West and West agreeing with the national average, while the East was even more strongly in favor of rolling, four-fifths of their coaches recommending it. In the South two-thirds favored rolling. One Middle Western coach stated that the rough fill was not rolled, but was allowed to settle over winter before work was started on the upper layers. A Western coach felt that coarse rock should be rolled, but that cinders should not.

8. *What size should rocks be for bottom fill?* This question was answered in a number of different ways. For example, a number of coaches specified egg-size, others specified fist-size, and for those giving actual measurements of diameter the average size was 3.2 inches and section-wise the range was from 3 to 3.4 inches. Several coaches indicated broken bricks made an ideal material; whereas, a Middle Western coach stated they used broken pottery and found it highly satisfactory. Of those who specified the material, there seemed to be about an equal choice between crushed rock, clinkers and gravel. Again, a number of coaches made reference to the porosity of the subsoil and the amount of rainfall.

9. *How many inches of sifted cinders should go over the coarse material?* The average for the 123 who answered this question was 5.08 inches; with the average for the East 5.16 inches; for the West 5.13 inches; for the Middle West 5.07 and for the South 5.0 inches.

10. *What is the ideal top dressing?* Among the Eastern coaches, 72 per cent felt that a mixture of clay and cinders was the ideal top dressing. The proportions varied from two parts clay and one part cinders to the most popular proportion of 3 parts clay to 1 part cinders. Also, quite popular, was an even mixture of the two. Loam, which is a mixture of sand and clay with enough of the former present to break up the cohesive characteristics of clay, was also popular. One coach suggested sifted clay and brick dust, while another liked to mix in peat moss with the clay and cinders.

In the Middle West slightly under 73 per cent favored cinders and clay or loam. Again, the mixture varied widely, one coach favoring two parts of clay to one part of cinders. In the balance of the cases, the proportion of clay was never better than one-half. Brick dust was indicated by four coaches, while two coaches preferred wood ashes. One coach used crushed limestone. Another coach used a mixture of 60 per cent cinders, 30 per cent soil, 5 per cent fine sand and 5 per cent brick dust.

Seventy per cent of the Southern coaches preferred a mixture of clay or loam and cinders. One coach stated that the perfect top dressing was yet to be found. In the West only 55 per cent favored clay and cinders for top dressing. This is undoubtedly due to the aforementioned shortage of cinders in the West. A number of coaches mentioned decomposed granite and clay. One coach uses sifted carbon over a clay soil, while another is experimenting with decomposed lava ash, which he states is prohibitive at the present time, due to the cost.

11. *How thick should the top dressing be?* There was a surprising unanimity of thought from all sections on this question. The average depth of top dressing in the East was 3¼ inches; whereas, in the other sections it was an even 3 inches. Any apparent discrepancy between the depth of excavation and the three layers of fill; namely, rough fill, sifted cinders and top dressing is due, in a large measure, to drainage tiles and methods of drainage which were not discussed in this questionnaire.

12. *What is the best binder for the top dressing?* Only eight coaches did not mention clay or loam in answering this question. One Eastern coach thinks calcium chloride is the best, while another coach prefers ground sphagnum moss. A Middle Western coach prefers brick dust and another, top soil. A Southern coach states top soil with no sand in it, while one of his fellow coaches does not think the best binder has been found as yet. In Arizona, one coach says Kaleechi makes the best binder, while another Western coach says carbon. A Southern coach mixes oil with clay and sand, and another Southern coach suggested flue ash as being as good a binder as clay. All types of clay received mention, from blue clay to Georgia red clay.

13. *How many lanes wide should the track be on the curves and backstretch and on the straightaway?* The preference on number of lanes for the curves and backstretch is shown in Table No. 1 and for the straightaway in Table No. 1A.

TABLE 1
Curves and Backstretch

	E.	M.W.	S.	W.
4 Lanes	08.3%	02.0%	09.4%	
5 Lanes	12.3	04.0		
6 Lanes	79.4	52.9	56.2	44.5
7 Lanes		04.0	09.4	
8 Lanes		31.3	21.8	50.0
9 Lanes		05.8		
10 Lanes			03.2	05.5

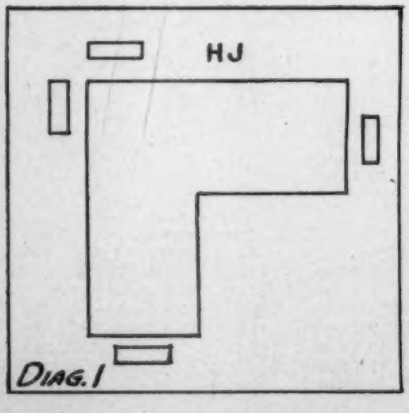
TABLE 1A
Straightaway

	E.	M.W.	S.	W.
6 Lanes	11.1%	10.9%	09.7%	04.7%
7 Lanes		01.9	09.7	
8 Lanes	66.6	50.9	54.8	38.2
9 Lanes	14.9	09.0	06.5	09.5
10 Lanes	07.4	25.4	19.3	33.3
11 Lanes				
12 Lanes		01.9		14.3

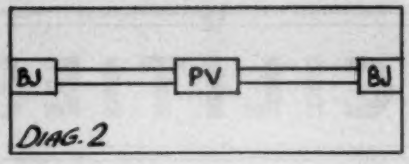
From the part of this questionnaire dealing with track construction, it is safe to say that the average track should have: 1. A radius of approximately 106 feet. 2. Curbs should be made of concrete, 3.3 inches high and 4.3 inches wide. 3. The track should not slope away from the pole. 4. The ideal depth of excavation is 21 inches, and into the excavation, in addition to drainage systems, should go 9 inches of rough fill, with the size of the rocks slightly larger than 3 inches in diameter. 5. This lower stratum should be rolled with a heavy roller. 6. Slightly better than 5 inches of sifted cinders should then be used, and the top dressing of clay or loam and cinders to the depth of 3 inches should be applied. 7. The almost unanimous choice for a binder for the top dressing is clay. 8. The track itself should be 6 lanes wide on the curve and backstretch, and 8 lanes wide on the straightaway.

Field Events

1. *Should there be more than one pit for each event?* In the East, the coaches by an almost three to one vote favored more than one pit for each event; although a number qualified their answers by stating "if possible" or "if practicable." One coach felt that more than one pit was necessary for the pole vault, but not for the high and broad jump. A Pennsylvania coach suggests an emergency pit should be available that could be used in case conditions warrant it. A Canadian coach sends along a sketch of their pit showing two high jump take-offs and four broad jump take-offs. This is shown in Diagram 1. In the Middle West, 62 per cent favored more than one pit. Two coaches said it depended upon the type of meets. If relay meets and conference meets were held, dual pits were desirable, but for all practical reasons were not necessary. Three coaches wanted dual runways for the broad jump and pole



DIAG. 1



DIAG. 2

vault. An Iowa coach suggested the layout shown in Diagram 2. Sixty-one per cent of the Southern coaches favored more than one pit for each event. Two coaches favored practice pits and pits to be used for meets only. Two other coaches said if the field was used only for track there should be several pits. In the West, 65 per cent of the coaches favored more than one pit. One coach says if meets of two divisions are run, there should be two pits. Another coach favored the layout shown in Diagram 2, while another suggested a set of practice pits. Another coach favored two pits for the broad jump and pole vault.

2. *Should high jump and pole vault pits be level with the ground, built up or both?* The last part of the question attempted to determine if the combination of a sunken pit and raised pit was preferred. In the East, 27.6 per cent wanted the pits level with the surrounding ground, 69.0 per cent wanted them built up and 3.4 per cent preferred a combination. The coaches in the Middle West indicated their choices percentage-wise as follows: level 23.3 per cent; built up 56.6 per cent; combination 13.3 per cent; with 6.8 per cent indicating the high jump should be level with the ground and the pole vault built up. The Southern coaches indicated a marked preference for built up pits, 76.4 per cent so stating; 14.7 per cent wanted the pits level and 8.9 per cent preferred a combination. In the West, we find only 8 per cent preferring pits level with the ground. The same percentage indicated that the high jump pits should be level and the pole vault pits built up. Sixty per cent of the Western coaches preferred built up pits, whereas 24 per cent preferred a combination. A major Texas coach states that the pole vault pit should be a platform built up 18 inches above the ground with gently sloping sides, and the landing pit built up another 18 inches to take out 3 feet of the vaulter's fall. The planting pit is recessed in the built-up platform and the platform is made of dirt with the slopes grass-covered.

3. *What is the ideal material for high jump and pole vault pits?* Altogether 19 different answers were received. Twelve of these are tabulated in Table No. 2, with the number answering in that manner indicated. The other seven answers, supplied by seven different coaches are as follows: 1.

TABLE 2

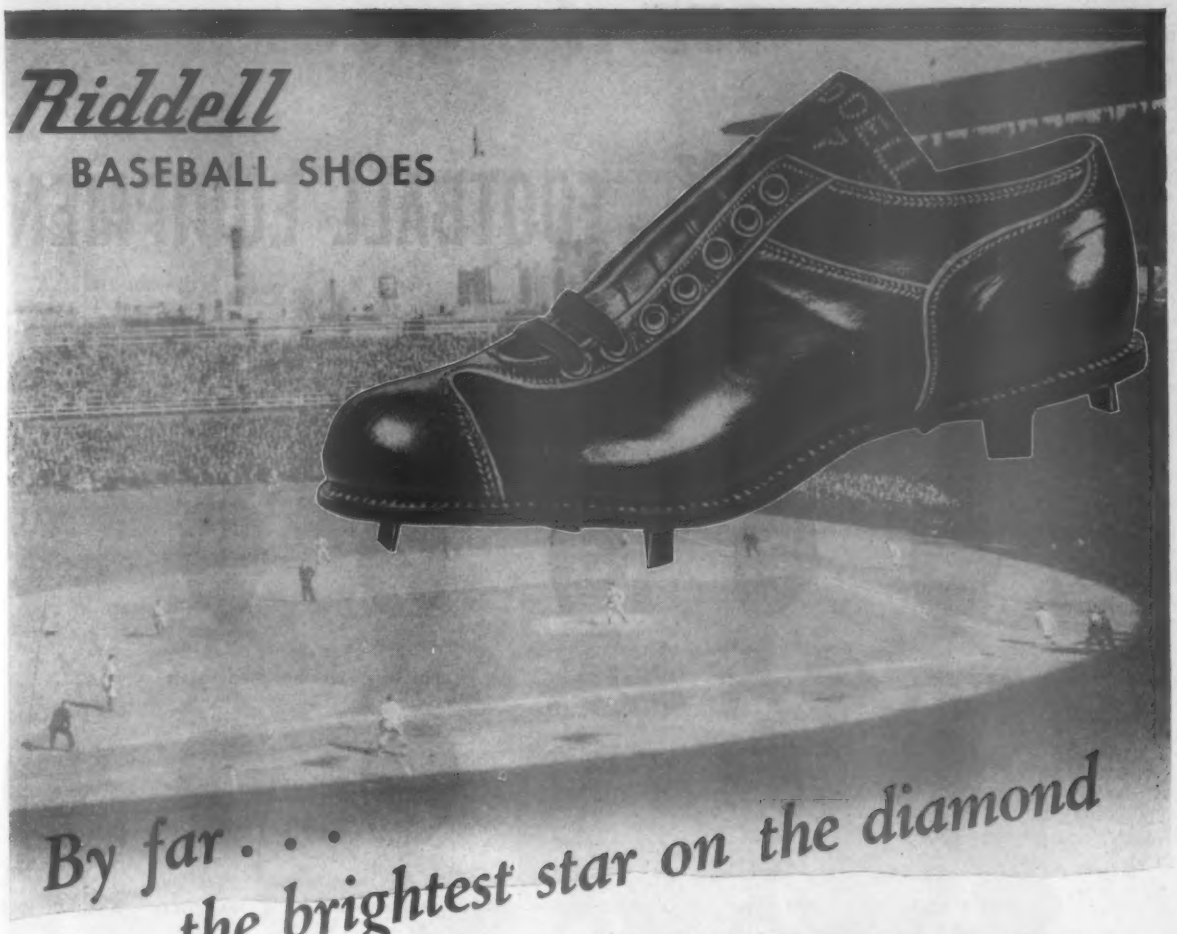
Preference for Material for Landing Pits					
Material	E.	M.W.	S.	W.	Total
Shavings	0	13	8	14	35
Sawdust	3	12	9	4	28
Sawdust and shavings	5	11	7	4	27
Sawdust and sand	6	12	2	0	20
Shavings and sand	7	5	3	0	15
Sawdust or shavings	2	4	3	1	10
Sand	0	3	0	0	3
Sand, shavings and sawdust	0	2	0	1	3
Tanbark	1	1	0	0	2
Sand and tanbark	1	0	1	0	2
Shavings if pits covered, sand if open	1	0	0	1	2
Sand for high jump pit	0	2	0	0	2

A 16-foot airfoam mattress, two feet thick; 2. shavings on top of canvas-covered springs; 3. straw under shavings and sawdust; 4. cottonseed hulls; 5. excelsior; 6. sawdust over birch bark and 7. 2 feet of loose cinders, covered with 1 foot of shavings.

4. *What is the ideal length of the runway for the pole vault?* The ideal length of pole vault runways on the national average is 125.5 feet. The East and the South were under the national average with 123.7 and 123.8 feet respectively. The West's average length was 125.6 feet, while the Middle West's average length was 126.7 feet. Only 8 per cent of the coaches specified a runway of under 100 feet, while over a quarter of the coaches specified a runway over 140 feet. One Eastern coach states that the length of the runway depends upon the vaulters a coach has. He states that an 11 foot, 6 inch, vaulter needs a 100-foot runway, while a 12 foot vaulter needs a 115-foot runway. A Pacific Coast coach suggests a 130-foot runway with 50 feet of turf at the far end.

5. *What is the ideal length of the runway for the broad jump?* The nationally specified length for the broad jump runway, on the average, is 126 feet. The sectional averages were: East 123.1 feet; South 124.1 feet; West 127.4 feet and the Middle West 127.9 feet. Nineteen and six-tenths per cent of the coaches specified that the broad jump runway should be shorter than the pole vault runway, while 17.6 per cent wanted it longer. The remaining 62.8 per cent specified the same length for both runways. No appreciable difference was noted in any section except the South, where slightly more than 50 per cent of the coaches specified either a longer or shorter runway for the broad jump than they specified for the pole vault. Three-fourths of the Western coaches specified the same length for both runways. An Eastern coach commented that most broad jumpers run too far and

(Continued on page 57)



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A Good Defense for More Wins

By EDWIN J. BECKMAN
Basketball Coach, Key West, Florida, High School

THE game of basketball, as it is played today, puts the greatest emphasis on offense. In the future, however, there is some indication that more emphasis will be placed on defensive play. Every coach, over a period of years, has drawn some conclusions on what has helped him the most to win games. We have found a good defense, with emphasis on possession of the ball, to be effective. Possession is nine-tenths of the game, and a sterling defense may be as spectacular as a high-scoring offense.

In selecting the players for his squad, a coach should look for boys who have a fiery, competitive spirit—boys who are enthusiastic about the game and want to play it. Height and agility are definite assets. The boys must be hustlers and be willing to pay attention to all the things said and done, whether they are playing or on the bench. If each player will put forth honest, determined effort in every practice, he will put out his best in games.

A good defense will win more games than a good offense. At the present time, most coaches spend a great deal of time teaching offense, and not enough time teaching defense. Every coach must realize from observation that the first thing a boy learns about basketball is how to score, and he spends most of his spare moments practicing various shots. Therefore, it is essential for the coach to encourage his boys to practice the defensive fundamentals of the game as well. For example, when a player is on defense, most of his running and footwork is backwards and sideways. Every man on the squad should practice these skills each day, before formal practice starts.

Early in the season a great deal of stress should be placed on defense, especially individual defense. Certain men should be placed against each other in all inter-squad games, and there should be determined concentration on defense. To help individual defense, the coach should try to teach floor superiority by having the defensive man in the right position at all times. Proper balance, correct distance from the opponent and a good view of the floor, the opponent and the ball, whenever possible, will help individual defense. It should be made clear to the boys that loafing is not possible on defense. If they must loaf, allow them to do so on offense. Three-on-three under one basket is an excellent early season defensive drill.

A good team defense may be based on an aggressive man-to-man drill. The boys should switch only when necessary, and the coach should call and work the switches as fast as possible. Switching must be practiced over and over in order to get the players to work well together. Early in the season, the boys will switch very little, but as the season progresses and they become more familiar with defensive play, they will switch more often. Praising good defensive play will help to make the squad defense-minded.

Some coaches who, because they are short of players most of the time, find it necessary to spend considerable effort devising special defensive maneuvers to counteract the difference in manpower between two teams. The placing of certain men on individual opponents may help a great deal, but this involves good scouting and much pre-game preparation.

Position on rebounds is as important for defense as it is for offense. Many times small men are better at ball recovery under the backboards because of certain skills such as jumping ability, timing, quickness and position. Tapping the ball as in a jump ball, instead of trying to catch it, will give a small man additional height. As the ball descends, a good man under the basket will maneuver for the best position and anticipate the ball's direction. After capturing a rebound, a good defensive man must know how to land on the floor and get the ball safely away from the opponent's basket.

Cross-court passing under an opponent's basket is not permitted. The boys should work on the assumption, that the opponent will get only one shot at the basket, and if he misses their team will take over. A player should sacrifice the possibilities of a fast break in order to have good defensive rebounding. On held balls, they should work on the assumption that they will get more jump balls than the opponents. A team may vary the style of doing this according to the opponents and the game conditions.

A team cannot win without the ball, and proper ball possession should always end up with a basket or free throw shot. The possession game is not a stall game—it is based on the theory of a minimum number of bad passes, control of the boards and out-of-bounds plays, control of jump balls at the free throw lines and control by proper use of the dribble. The dribble in basketball may easily be over-emphasized but is necessary in the possession-type game and for good ball-handling. It is good insurance for a move when a player cannot shoot or pass. Dribbling is also important in taking the ball away from the backboards or in driving in for a basket. Insist that the boys practice dribbling until they have good control of the ball and are still able to see all of the players on the court. The ability to change pace also makes for a good dribbler.

A great deal of stress should be placed on the possibilities of intercepting passes. The responsibility of deciding whether to make a try for an interception, or to drop back and cover his man is placed upon the player involved. A long pass is the best time to try an interception, but overdoing this type of game should be avoided.

A good offense should be built around good two-handed shooting and a sound follow-up game. A player should never shoot off balance and should wait until enough men on his team are in position to follow up the shot. Inside the twenty-foot area, the boys may be allowed to shoot any way they please as long as they are able to make a good percentage of their shots.

One phase of the offensive game which a number of coaches seem to have forgotten is the cutting game. The boys should be instructed to keep cutting for the basket all night, particularly when the ball is in play on the opposite side of the court. The best time for an offensive player to cut is when he does not have the ball and the defensive man is playing him close. The cutting must be timed to get past the defensive man and at a time when a teammate is in position to pass the ball. If the opponent's defense becomes loose because of the cutting game, the offensive player will be able to shoot from the outside. The most important fundamental for the coach to stress is proper ball possession.

(Continued on page 48)

ED BECKMAN literally grew up with basketball, as his father was Johnny Beckman who played for many years with the Original Celtics. Following service as an athletic officer in the navy, Beckman stayed on in the Canal Zone to become coach of all sports at Canal Zone Junior College.

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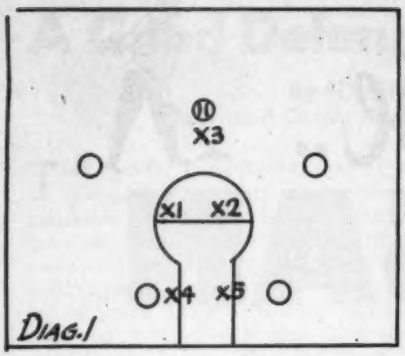
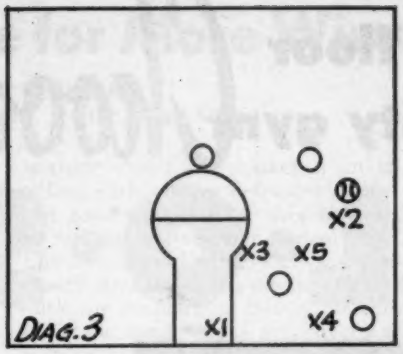


DIAG. 1



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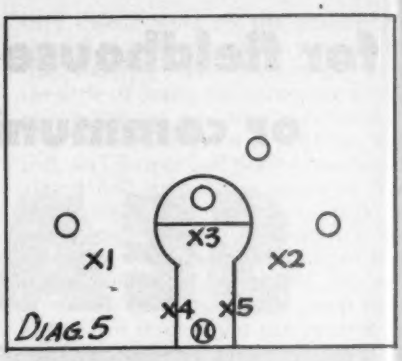


DIAG. 5

A Zone Variation

By EDWARD M. CHUCK

Basketball Coach, Grand Junction, Iowa, High School

DUE to the fact that most of our boys were too slow to play a man-for-man defense, we had to use a zone. The 3-2, 2-3, 2-1-2, and the 1-3-1 were tried, but they did not meet our requirements. We resorted to a zone that was used when we were in high school. Although we had not seen this zone since our high school playing days, we thought it was worth a try. Since there is no definite name for it, we shall call it Tharp's Zone. Eldon Tharp was our high school coach and the person from whom we received the idea. During four years at Grand Junction we have used it continuously, and at the present time our basketball record stands at 62 wins and 13 losses.

This zone seems to give us more protection under the basket, plus the strong side of the floor. It will be noticed that the defense forms two diagonal lines, one of three men and one of two men, whenever the ball is on the sides of the court. This defense also provides opportunities for a fast break.

In Diagram 1, when the ball is in the center of the court, we have the center, X3, out on that man. The center never goes out very far beyond the free throw circle unless the opponent is a good long set shot. The two forwards, X1 and X2, set up on the free thow line arm's length apart, and the two guards, X4 and X5, set up on the lane marks arm's length apart. With the forwards and guards this distance apart, they should be able to intercept any pass thrown in the free throw area.

With the ball on the side, as is shown in Diagram 2, forward, X2, covers the man with the ball just out in front of the free throw circle. X3, the center, drops in the middle, and the weak-side forward, X1, drops into the guard position. The right guard, X5, moves out and forward to take the side man, and the other guard, X4, moves over into the spot left vacant by the right guard.

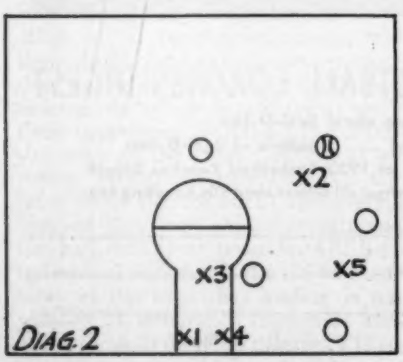
In Diagram 3, the ball has been passed to the side man and we try to tie him up immediately by having forward, X2, and guard, X5, come in from both the front and back. Center, X3, stays in the middle, with the other guard, X4, taking the man in the corner. The weak-side forward, X1, moves across the lane to help the center cover. the pivot post player.

When the ball is in the corner, as is shown in Diagram 4, the guard, X5, covers the man with the ball. X2, the right forward, is out and the center, X3, is stationed in the middle near the post player. Left guard, X4, is on the right side of the lane and the weak-side forward, X1, is on the left side of the lane. X4 and X1 are arm's length apart.

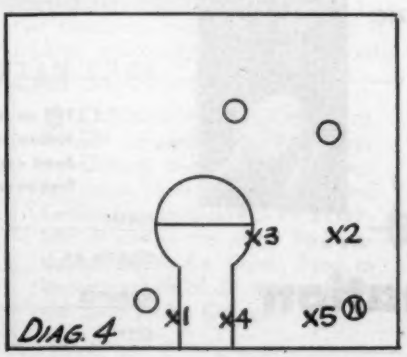
In Diagram 5, when the opponents are out-of-bounds under their basket, the two guards, X4 and X5, set up on the lane lines arm's length apart so they are in a position to intercept any pass which may be thrown in to a man breaking in the middle. The two forwards, X1 and X2, flank the center, X3, and watch for a pass to a man breaking in from the sides. We want the opponent to throw out to the guards and not to a man near or under the basket.

One general weakness of this defense, when not played right, is apparent if the weak-side forward does

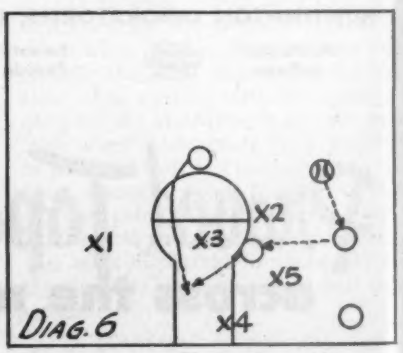
(Continued on page 52)



DIAG. 2



DIAG. 4



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National Honor Roll

Competitor and School	Meet	Time
100-Yard Dash		
Cunning (Hoover, Glendale, Calif.)	State	9.7
Turner (Alameda, Calif.)	El Cerrito Relays	9.7
Childress (Odessa, Texas)	West Texas Relays	9.7
Murchison (Phillips, Chicago, Ill.)	District	9.7
King (Delano, Calif.)	C.I.F. Central Section	9.8
Owens (Polytechnic, Long Beach, Calif.)	State Trials	9.8
Brownsberger (Bonita, LaVerne, Calif.)	State Trials	9.8
Frieden (Austin, Texas)	San Antonio Inv.	9.8
Clinkscale (Arlington Heights, Fort Worth, Texas)	Regional	9.8
Horne (Central Voc., Cincinnati, Ohio)	State	9.8
Naviu (Saranac Lake, N. Y.)	Sectional	9.8
Lee (Alamogordo, New Mex.)	State	9.8
220-Yard Dash		
Barber (Messick, Memphis, Tenn.)	State	21.1
Cunning (Hoover, Glendale, Calif.)	C.I.F. Southern Section	21.2
Pollard (Coatesville, Pa.)	State	21.3
Brownsberger (Bonita, LaVerne, Calif.)	C.I.F. Southern Section	21.3
Childress (Odessa, Texas)	State	21.4
King (Delano, Calif.)	State	21.4
Robinson (North Tarrytown, N. Y.)	Sectional	21.5
440-Yard Dash		
Mashburn (Capitol Hill, Oklahoma City, Okla.)	State	48.1
Hatcher (Central, Detroit, Mich.)	City Meet	48.8
Ferraro (De La Salle, New York City)	Catholic Assn. Meet	49.3
Clark (Oelwein, Iowa)	State	49.5
Burnett (West, Cleveland, Ohio)	District	49.5
North (Jordan, Long Beach, Calif.)	State	49.7
Kirchman (Anaheim, Calif.)	State	49.7
880-Yard Run		
Merkins (West Phila. Catholic, Philadelphia, Pa.)	U. of Penn. Inv.	1:57.8
Klots (Pelham, N. Y.)	Intersectional	1:58.0
Lowthert (Pottsville, Pa.)	State	1:58.3
Phillips (Lawrence, L. I., N. Y.)	Intersectional	1:58.3
Jones (Technical, Oakland, Calif.)	State	1:58.4
Heard (Sayre, Okla.)	State	1:58.7
Briggs (Pittsburg, Calif.)	State	1:59.0
Mile Run		
Lambert (Central, Muncie, Ind.)	State	4:22.3
Murphy (Calumet, Chicago, Ill.)	Chicago U. Indoor	4:23.0
Reed (Estacada, Ore.)	A.A.U.-H.S. Div.	4:25.6
Adams (Salem, Ore.)	A.A.U.-H.S. Div.	4:25.8
Fekete (Lower Camden County, Pa.)	U. of Penn. Inv.	4:26.3
Cage (McClymonds, Oakland, Calif.)	City	4:26.3
Eshbaugh (Fredonia, Kans.)	State	4:27.0
Zipper (Sewanhaka, Floral Park, N. Y.)	Sectional	4:28.8
High Hurdles		
Pruitt (Istrouma, Baton Rouge, La.)	State	14.3
Stevens (Phillips, Chicago, Ill.)	City (Sectional)	14.3
Knowles (West Palm Beach, Fla.)	State	14.4
Wadlington (Mansfield, Ohio)	State	14.4
Morris (Medford, Ore.)	State	14.4
Hartung (Reagan, Houston, Texas)	State	14.4
Smith (Central, Cleveland, Ohio)	Senate	14.4
Howard (Northwestern, Detroit, Mich.)	City	14.4

Competitor and School	Meet	Time
Low Hurdles		
Fowler (Ames, Iowa)	State	19.2
Morris (Medford, Ore.)	State	19.3
Smith (Central, Cleveland, Ohio)	East Tech. Relays	19.4
Windhorn (North, Phoenix, Ariz.)	Luke-Greenway Inv.	19.4
Walker (Cathedral, Los Angeles, Calif.)	C.I.F. Southern Section	19.5
Clarke (Glendale, Calif.)	State	19.5
Pruitt (Istrouma, Baton Rouge, La.)	State	19.5
Campbell (Plainfield, N. J.)	State	19.5
Pole Vault		
McKown (Lyons Twp., La Grange, Ill.)	Oak Park Relays	13— 3⅛
Merrill (Belmont, Los Angeles, Calif.)	Northern League	13— 3
Chambers (Union, Phoenix, Ariz.)	Luke-Greenway Inv.	13— 0¼
Anderson (Glendale, Calif.)	C.I.F. Southern Sec.	13— 0
Hollmer (Grass Valley, Calif.)	San Joaquin Sec.	13— 0
Carter (Fair Oaks, San Juan, Calif.)	San Joaquin Sec.	13— 0
Stalnaker (Marietta, Ohio)	Newark Relays	12—10½
Rhodes (Jefferson, Los Angeles, Calif.)	State	12— 9
High Jump		
Allard (Fresno, Calif.)	City	6—6⅛
Anderson (Windsor, Colo.)	State	6—6
Hamilton (Jordan, Los Angeles, Calif.)	City	6—5⅞
Gelvin (Polytechnic, Long Beach, Calif.)	C.I.F. Southern Sec.	6—5⅛
Shelton (Washington, Los Angeles, Calif.)	Southern League	6—5⅛
Smith (Jefferson, Los Angeles, Calif.)	Southern League Pre.	6—4½
Jeter (Roosevelt, Los Angeles, Calif.)	Southern League	6—4⅛
Fairchild (Jefferson, Los Angeles, Calif.)	Southern League Pre.	6—4
Robinson (Jefferson, Los Angeles, Calif.)	Southern League Pre.	6—4
Sinclair (Washington, Los Angeles, Calif.)	Southern League Pre.	6—4
Broad Jump		
Hairston (Central, Columbus, Ohio)	Ohio Wesleyan	24—8½
Parker (San Diego, Calif.)	C.I.F. Southern Sec.	23—9¼
Hicks (Bisbee, Ariz.)	Southern Conference	23—5⅜
Garrison (Compton, Calif.)	Coast League	23—3½
Andrews (Jordan, Los Angeles, Calif.)	E. Marine League	23—3½
Williams (Chester, Pa.)	U. of Penn. Champ.	23—1⅞
Smith (Wyandotte, Kansas City, Kans.)	Sunflower League	23—0
Presber (Hollywood, Calif.)	Western League	22—11½
Cunningham (Poly. Los Angeles, Calif.)	Northern League	22—11½
Shot Put		
Patterson (Taft, Calif.)	State	59—2½
Wetter (Grossmont, Calif.)	C.I.F. Southern Sec.	58—4⅞
Powell (San Diego, Calif.)	C.I.F. Southern Sec.	57—9¼
Grier (Roselle, N. J.)	Schenectady, N.Y. Inv.	57—1¾
Blockson (Norristown, Pa.)	U. of Penn. Champ.	56—9¼
Patton (Harvard, North Hollywood, Calif.)	Prep League	56—1¼
Knight (South Gate, Calif.)	City	55—7
Discus Throw		
Patterson (Taft, Calif.)	C.I.F. Central Sec.	175— 3¾
Parsons (Eugene, Ore.)	District	167— 4½
Coakley (Piedmont, Calif.)	State	164—11½
Samuelson (Brady, Texas)	Brady Inv.	163— 1¾
Sorrano (Fresno, Calif.)	C.I.F. Central Sec.	163— 0
Helgeson (Tech., St. Cloud, Minn.)	Regional	162-6
Jackson (Amarillo, Texas)	Sandi Relays	160-8

Compiled by E. A. THOMAS

Javelin

Scordo (Kane, Pa.)	County	194–10
Garcia (Alamogordo, New Mex.)	State	193– 1⅝
Grier (Roselle, N. J.)	State	192– 6
Flowers (Wyandotte, Kansas City, Kans.)	Pitt Relays	191– 4
Mills (Medford, Ore.)	State	190– 7¼
Gorsky (Tech., Erie, Pa.)	City	186– 4
Chamberlin (Chapman, Kans.)	State	185– 8¼

440-Yard Relay

Austin, Texas	State	43.1
East, Des Moines, Iowa	State	43.5
Cardozo, Washington, D. C.	Penn Relays	43.7

880-Yard Relay

Edison, Fresno, California	West Coast Relays	1:30.0
East Tech., Cleveland, Ohio	Ohio Wesleyan Relays	1:30.0
Capitol Hill, Oklahoma City, Oklahoma	State	1:30.1
Polytechnic, Los Angeles, California	State Trials	1:30.3
Jefferson, Los Angeles, Calif.	State Trials	1:30.3

One Mile Relay

Odessa, Texas	State	3:25.6
West, Cleveland, Ohio	City	3:26.0
John Adams, Cleveland, Ohio	City	3:26.0
Cardinal Hayes, New York	Penn Relays	3:26.5
Davenport, Iowa	Drake Relays	3:27.3
Capitol Hill, Oklahoma City, Oklahoma	State	3:27.6
Carlisle, Pennsylvania	State	3:28.1
East, Des Moines, Iowa	State	3:28.2
Roosevelt, Gary, Indiana	State	3:28.2

Track In The High Schools

EACH year we look forward to preparing this feature. The idea of running a nation-wide high school track meet, based on the results of the state high school track meets, first presented itself to us six years ago. At that time it was done with the purpose of giving credit to those states that had good track programs, and at the same time attempting to increase interest in track in those states where interest lagged.

As we have pointed out each year, the track meets are held under as wide a range of conditions as possible and, consequently; a look at one year does not present a true picture of track in any given state. Only when a period of years is considered, is it possible to determine a state's status in regard to the sport of track and field.

California First Again

This year's meet finds California in first place again, as she has been for five of the six meets. Her total of 78½ points was a drop of 16¼ points from the all-time high set last year. In the six years, California has earned the amazing number of 26 firsts, or ties for first, and is far ahead of the next state, Texas, with 10 firsts.

Illinois, which was second a year ago, maintained that position again, although she was down 14 and a fraction points from her high of 53½ points, also set last year.

Ohio, likewise, repeated in its position of a year ago, namely, third. Ohio has never finished below sixth, and from this standpoint ranks next to California.

Texas, finishing in fourth place, as she did last year, has also been very consistent, never having finished lower than ninth. She holds the distinction of having been the only state, other than California, to win the meet. Texas pulled the trick in 1948.

Iowa, which failed to score last year for the first time, moves into fifth place, replacing Colorado. Pennsylvania takes over sixth place from New York which drops to seventh. Oklahoma, which has registered points in every meet except the first, takes over eighth place with her highest point total to date, 20⅓ points.

Oregon, like Iowa, failed to register points for the first time last year, moves back into the point column and takes over ninth place. Tennessee, which had failed to score a point in the five previous meets, ties for tenth, with Louisiana, whose previous high position was nineteenth. These eleven states comprise the "top ten." The admission of Tennessee and Louisiana into the "top ten" marks the first time a southern state, other than Texas, has appeared in the group.

Pacific States Lead Again

Each year, we divided the country into nine sections, and averaged the number of points on a state basis. The Pacific Coast continues to hold a dominant position. This year, although averaging four points less than last year, the Pacific Coast was almost double the average of the next section, the Middle Atlantic. The East North Central section was third and the West South Central section, a mere fraction of a point behind, was in fourth place.

The sectional averages are: Pacific Coast (32.7); Middle Atlantic (17.7); East North Central (16.6); West South Central (16.2); West North Central (7.0); East South Central (3.5); Mountain (3.4); New England (1.8); and South Atlantic (.7).

Last year the five-year averages for the sections were established. This year finds the following sections over their previous averages: Pacific Coast (3.2); East South Central (2.8); Middle Atlantic (2.2); West South Central (1.3); Mountain (.7); South Atlantic (.6) and West North Central (.5). The East North Central states dropped 7.9 points below their average and the New England states dropped 1.6 below their previously established average.

During the six years of the meet, 37 states scored points. California, with a total of 445¼, is far ahead. Down through the next six spots there was no change in the ranking. The totals for the states in the first seven are: Texas (226½); Ohio (213½); Illinois (207); Indiana (178); Iowa (123); and New York (113). Pennsylvania (92¼) and Wisconsin (75½) switched places between eighth and tenth. New Jersey remained constant in the ninth spot with (85) points. The remaining states are: Missouri (73½); Oklahoma (68⅓); Oregon (66); Kansas (50). Massachusetts moved into a tie with Virginia with 35 points. Connecticut remained in nineteenth place with 27 points. Louisana moved up from twenty-fifth to twentieth with 23 1/5 points. Michigan had (20½); Arizona (20); Nebraska (17); Minnesota (16); Idaho (15). Tennessee, which had previously failed to score, is in the twenty-sixth spot with 14 1/5 points. Utah has (14); Montana (11); Florida (8½); Kentucky (8); newcomer, New Mexico (6); West Virginia (5); North Dakota (4 1/5); South Dakota (3 1/3); Mississippi (1); Wyoming, another newcomer (1/3), and Georgia, which has failed to score since the first meet (1/9). Alabama, Arkansas, Maine, Maryland, Nevada, New Hampshire, North Carolina, South Carolina and Vermont hold track meets, but these states have failed to score.

The students of track and field will find a marked similarity between the standings of the states in this track meet and in the national track pic-

(Continued on page 55)

STATE	120 High Hurdles	100 Dash	Mile	880 RELAY	440	180 LOWS (a)	880	220 DASH	POLE	SHOT	HIGH	DISCUS	BROAD	JAVELIN (b)	TOTAL
ALA.	16.1	10.0	4:36.8	1:35.3	51.2	20.5	2:04.2	21.9	10-8	49-0	5-8	149-2	21-4¾		
ARIZ.	14.6	10.0	4:34.5	1:32.9	51.1	20.1	2:01.4	22.3	12-6⅜ 6	50-3¾	6-0	145-1½	22-11¼		6 (18)
ARK.	15.0	10.2		1:32.5	52.1	20.3	2:05.8	22.7	11-0	49-7	6-0	148-4½	21-3		
CALIF.	14.5 ½	[redacted]	4:30.7	1:30.9 3	49.7 6	19.5 4	1:58.4 6	21.4 7	[redacted]	[redacted]	6-5⅜ 8	[redacted]	22-5¾ 4		78½ (1)
COLO.	15.4	10.4	4:35.7	1:33.4	51.6	20.8	2:02.4	22.8	11-6	50-1½	★	144-0	21-3		10 (13)
CONN.	17.1	10.0	4:36.4	1:34.6	51.6	21.2	2:01.3	22.8	11-3	51-1	5-10	130-9¼	22-4 2	172-5	2 (23)
DEL.	No state meet														
FLA.	★ 14.4 5	10.0	4:37.6	1:32.4	52.0	20.2	★ 2:03.7	22.4	★ 12-5	50-2⅜	6-1⅛	145-4	21-10½		5 (20)
GA.	14.9	10.2	4:35.2	1:33.2	51.9	20.4	2:05.1	22.4	12-1½	49-4¾	6-0	132-9	21-1⅛	162-1	
IDA.	16.0	10.3	4:33.4	1:34.0	52.9	21.0	2:02.4	22.7	10-4½	47-4½	6-0	145-2½	19-11½	174-8	
ILL.	14.5 ½	10.0	4:25.4 8	1:30.5 8	50.6	19.8	1:59.7 1-3	22.6	12-8½ 8	53-9½ 1	6-3⅞ 6	155-8	22-8½ 7		38 5/6 (2)
IND.	15.1	10.0	★ [redacted]	1:32.9	50.4	(c) 22.6	2:00.4	21.8	12-0	51-6½	6-1¾		21-11⅝		10 (13)
IOWA	★ 14.7	1-5 9.9	4:39.2	1:30.7 6	49.5 8	[redacted]	2:02.5	21.7	12-0¾	54-2 4	5-11⅝	144-4¼	21-5		28 1/5 (5)
KANS.	15.0	10.0	★ 4:27.0 6	1:31.5	51.0	20.0	1:59.9	21.7	12-4¼ 2	51-11¾	6-0⅛	153-2½	22-0	183-8¼	8 (15)
KY.	★ 15.0	10.0	4:40.6	1:34.7	52.0	19.9	2:04.7	22.3	10-9¾	47-11⅜	6-1	★ 140-5¼	21-7½		
LA.	★ [redacted]	1/5 9.9	4:38.8	1:32.3	50.0	★ 19.5 4	2:00.5	22.1	12-0	51-4¼	5-9	141-8¼	22-2⅛	162-0	14 1/5 (10)
ME.	16.7	10.7	4:38.2	1:40.9	52.5	21.7	2:05.0	23.9	7-0½	45-1½	★ 5-11½	138-7	20-11¼	157-2	
MD.		10.6	4:54.6	1:37.2	53.9		2:05.9	23.4		46-8¼	5-5¼		20-11		
MASS.	15.5	10.3	★ 4:29.3 2	1:31.6	50.2 1	21.8	1:59.6 2	22.3	11-0½	★ 53-9⅞ 2	6-0		21-9		7 (17)
MICH.	15.7	10.0	4:41.3	1:34.0	50.6	19.6 ½	2:00.3	21.8	12-2½	51-10½	5-11⅝		21-7½		½ (24)
MINN.	15.6	10.2	4:34.0	1:31.9	51.4	20.8	2:00.2	22.9	11-11	51-8¾	5-11	160-11¼ 8	22-1¾		8 (15)
MISS.	16.0	10.4	5:51.4	1:36.4	53.9	24.0	2:04.7	23.1	10-9	48-11 1-16	5-8	143-9	20-2½		
MO.	14.9	10.1	4:30.8	1:31.2 ½	51.4	20.6	1:59.5 4	21.7	11-6¾	50-4⅞	5-11 7-16	150-2¼	21-4⅜		4½ (22)
MONT.	15.4	10.1	4:44.8	★ 1:32.1	★ 50.2 1	20.5	2:03.8	22.1	12-0½	49-4⅛	6-3¼ 4	149-6	20-11⅞	167-11½	5 (20)

MISS.	16.0	10.4	5:51.4	1:36.4	53.9	24.0	2:04.7	23.1	10-9	48-11 1-16	5-8	143-9	20-2½		
MO.	14.9	10.1	4:30.8	1:31.2½	51.4	20.6	1:59.5 4	21.7	11-6¾	50-4⅞	5-11 7-16	150-2¼	21-4⅜		4½ (22)
MONT.	15.4	10.1	4:44.8	★ 1:32.1	★ 50.2 1	20.5	2:03.8	22.1	12-0½	49-4⅛	6-3¼ 4	149-6	20-11⅞	167-11½	5 (20)
NEBR.	15.0	10.1	4:40.4	1:32.2	51.0	★ 20.5	2:00.5	22.3	12-1⅛	48-8	5-11⅛	140-10⅛	22-0⅞		
NEV.	15.6	10.1	4:53.3	1:34.1	52.4	20.6	2:07.0	23.2	11-0	46-6¼	5-8	138-9¾	21-0¼		
N.H.	★ 15.4	10.3	4:41.9	1:38.6	52.6	★ 21.1	2:03.7	22.6	11-0	43-9¾	★ 5-11	122-11¼	20-10½	161-3½	
N.J.	15.0	10.0	4:29.4 1		51.5	19.5 4	2:00.6	22.0	11-0	55-2½ 6	6-2	157-6¾ 1	21-9¾	169-4	12 (13)
N. MEX.	★ 15.1	★ 9.8 5	4:41.6	★ 1:32.7	51.6	20.4	2:03.0	★ 21.6 1	10-10½	44-4⅝	5-11⅜	131-4¾	21-8⅛	★ 193-1⅝	6 (18)
N.Y.		★ 9.8 5	4:28.8 4	1:31.7	50.5	20.2	[redacted] 9	21.5 3	12-3½	53-7¼	6-1⅛	144-1	22-2¾		21½ (7)
N.C.	16.5	10.4	4:53.7		54.6	21.5	2:05.4	22.4	10-10	47-3⅜	5-0¾	141-9⅜	21-8½	157-1¾	
N.D.	15.5	9.9 1/5	4:52.3	1:40.2	55.8	★ 20.8	2:14.1	22.5	10-6	46-11¼	5-10½	149-4	19-5¾	149-8	1/5 (27)
OHIO	★ 14.4 5	9.8 5	4:32.6	1:30.9 3	49.8 4	19.6½	2:00.8	21.8	11-10	52-8⅝	6-1¾	★ 158-7 6	[redacted]		33½ (3)
OKLA.	14.7	10.1	4:32.2	[redacted]	[redacted]	19.7	1:58.7 1/3	22.3	11-4½	48-8¾	6-1	146-11¾	21-5		20 1/3 (8)
ORE.	★ 14.4 5	10.2	4:26.6	1:32.3	50.2 1	19.3 8	2:00.4	22.8	12-0	53-8½	6-1½	★ 156-9¼ 2	21-8½	190-7¼	16 (9)
PA.	15.1	9.9 1/5	4:30.0	1:31.2½	50.7	(c) 22.9	[redacted]	21.5 3	12-2½	56-5 8	6-2⅛ 1	148-2½	22-3¼ 1	193-1½	22 7/10 (6)
R.I.		No state meet													
S.C.	15.7	10.1	4:45.5	1:37.2	52.6	★ 21.1	2:08.0	22.5	★ 11-7	48-3	6-0½	★ 142-6¼	21-5½	163-0	
S.D.	15.8	10.3	★ 4:33.4	1:34.8	52.0	20.5	1:59.9	23.5	11-4	48-4¾	6-0	★ 150-7	20-6½		
TENN.	15.15	9.9 1/5	4:39.5	1:35.0	★ 51.3	★ 20.7	2:03.3	★ [redacted] 0	11-0	49-4¾	5-9	137-3¼ 4	21-5¾	★ 174-2¼	14 1/5 (10)
TEXAS	14.4 5	9.8 5	4:30.5		50.3	(c) 21.7	2:01.4	21.4 7	12-6 4	52-10	6-3 2	157-11¾	22-8½ 7		30 (4)
UTAH	15.5	10.1	4:42.3	1:34.2	52.5	(c) 23.7	2:03.5	22.4	12-0	48-6¾	5-10	★ 155-4	20-10½	169-8	
VT.	15.9	10.6	4:42.3		53.4	★ 21.1	2:08.5	23.6	11-0	44-10½	5-9	132-9½	20-6	158-10½	
VA.	15.6	10.1	4:48.5	1:41.4	51.7	20.5	2:07.0	22.8	11-6	50-11¾	6-0⅞	★ 149-10½	20-7¾		
WASH.	15.0	10.3	4:31.3	1:31.5	51.3	(c) 22.8	2:00.0	22.0	12-3½	53-3½	6-0¼	144-10⅝	21-10⅜	178-9¼	½ (24)
W.VA.	15.5	10.5	4:39.1		52.3	20.3	2:04.2	23.0	10-8	★ 52-3⅜	5-9½	143-5½	20-10½		
WISC.	14.9	10.3	4:40.7	1:32.9	51.8	(c) 23.2	2:03.1	(d) 20.5	12-0	52-11½	5-10¾	148-9	21-9¼		
WYO.	15.6	10.2	★ 4:36.8	1:37.2	★ 51.8	21.4	★ 1:59.7 1/3	22.7	11-6	48-0⅝	5-10	141-10	20-3¾		1/3 (26)

(a) Points awarded on 180 yard low hurdles.
(b) No points awarded for javelin as less than half the states have this event.
(c) Run the 200 yard low hurdles.
(d) Wisconsin runs the 200 yard dash.

Tournament Preparation

By C. Q. SMITH

Highland Park High School, Dallas, Texas
Formerly High Point College, High Point, N. C.

PREPARATION for the post-season basketball tournament begins on the first day of practice in the early fall. Actually this preparation is more psychological than physical. The first meeting of the squad is held late in September. At this time we welcome the new members and explain that the conference championship will be awarded to the team winning the championship tournament which will be held in February. It is also pointed out that everything we do will be toward winning that final contest.

It is advisable to arrange as hard a pre-conference schedule as possible. This tends to show the boys how far they have to go to become a championship ball team. In playing outstanding teams the won and lost record may suffer, but valuable experience so necessary in winning tournaments and championships is gained.

Our first two weeks of practice consists of working in shorts out-of-doors. The boys run on the grass rather than on the track because of the cushioning effect such practice offers the feet and legs, practically eliminating the danger of shin splints and pulled muscles. In addition to running laps and wind sprints, we give a short series of calisthenics and a number of agility drills. These drills are made up of fundamental movements that will later be incorporated into our offense and defense. The main reason for these drills is to achieve speed, coordination and balance.

Upon completion of training out-of-doors, practice is moved to the gymnasium for nightly sessions. These night sessions interfere less with our football coaching. The first week indoors it is a good policy to practice without using any basketballs. Some coaches may not agree or understand our reasoning, but two things are accomplished by doing this. First, it allows slow conditioning of the feet and legs and permits work on agility and form. Second, it emphasizes to the players the fundamentals other than shooting and ball-handling.

New drills are added. One that has helped a great deal in developing stance is the *bowling ball drill*, for which the squad is divided into two rows and is spaced about 20 feet apart. Then we explain that the desirable stance on both offense and defense is a head up — tail down position. On defense, we like to have the elbows to the side of the body and the hands in a position to bat up at the ball. A slow motion *bowling* action which rolls an imaginary ball across the floor is then demonstrated. The players are told that a scooting ball indicates good stance, while a bouncing ball shows poor stance. A few days later a *skating* movement is added after releasing the imaginary ball. Stress is placed on not using cross-over steps. A ball is then added to the drill for the remainder of the season.

TEX SMITH'S coaching career has been notable for the success his teams have experienced in tournament play. At Tennessee Wesleyan, Georgetown College and last year at High Point College his tournament record has been outstanding. Last year's High Point teams won the North Carolina State Conference Tournament and the District 26 N.A.I.B. Tournament. Since writing this article Mr. Smith has returned to high school coaching in his native state of Texas.

Another drill that is used is the *hot circle drill*. In this a semi-circle of 8 to 10 boys is formed with one boy in the middle. This circle should have a radius of about 12 feet. Our object is to have the boy in the middle keep two balls air passing to those in the semi-circle. The faster the passes, the better the reflexes and lateral vision. In this drill, the man in the center can remain until he misses or muffs a pass.

The next drill is the *volleyball drill*. This is three on a team volleyball without a net, but with a line on the floor separating the two teams. In place of a regulation volleyball, a basketball is used. This drill teaches finger extraction and control.

After the *volleyball drill* comes our favorite tipping drill, which is called *one, two, three and in*. It is started by tossing the ball against the right side of the backboard. The object is to tip the ball against the backboard three times, with the player coming to the floor each time, and then tipping the ball into the basket the fourth time. Stress is placed on high jumping to meet the ball. This drill is repeated three or four times right-handed, left-handed, and with both hands.

We may put the cart before the horse in teaching how to catch a pass before teaching how to pass. This is done because a large number of the boys that come to us have trouble catching a bounce pass. A demonstration is given to show that a bounce pass has top spin and the first thing to do in catching such a pass is to have one hand on top of the ball to stop the spin, and the other hand under the ball to trap it. Throughout the season more time is spent on this drill than on any other because the bounce pass is used a great deal for our fast break and for starting a number of our plays.

Each year, during the Christmas holidays, we accept an invitation to play in some tournament. This not only gives the squad an extended period of being together, but helps us see how the boys react to tournament pressure. During this past season it was noticed that one regular from the preceding year's team seemed to freeze up in tournament play but was outstanding during the regular season. This tendency not only held true in the early tournament at Terre Haute, Indiana, but later at Kansas City in the N.A.I.B. Tournament. He also fouled out early in the games of the two tournaments we won. This early reaction was the first indication of the fact that we might need a replacement for this boy in post-season tournaments. Usually we have noticed that a player who is more or less unknown is better under such pressure.

The first time we play a team on a home-and-home basis, a movie is made of the entire game. When viewing the film with the squad, we look first for individual mistakes on defense. Poor defensive team position is rarely pointed out at this time. Such instruction is postponed until the showing of the film prior to the second game. The second time the picture is gone over, we study our offensive mistakes. We might add that we will not make many changes in defense for

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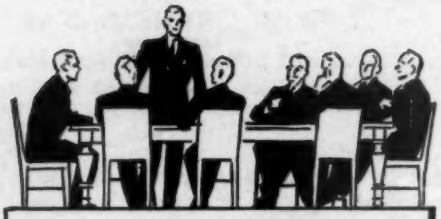

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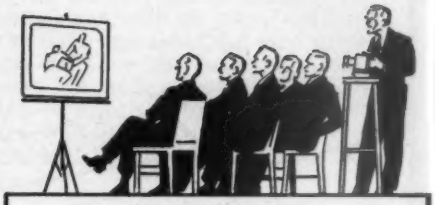

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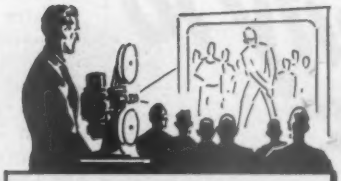

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All movies are taken to the tournament. One hour before lunch on the day of the game, the film of the game against the team we are to play that night is shown. A review is given of the changes to be made.

The squad stays together at all times on the day of the game. If the game is at night, the players have a heavy lunch and then take a three-hour nap. Our pre-game meal consists of roast beef, baked potato, English peas, lettuce, two pieces of dry toast and jello. Hot tea or coffee is served three and one-half hours before game time. After the meal, the squad takes a 15 or 20 minute walk; the players then retire to their rooms until it is time to dress. It is the manager's responsibility to see that the players are dressed and ready to leave the hotel at the appointed time. Upon arrival at the field house, the squad goes immediately to the dressing room assigned to us. Our players are not permitted to see any part of the preceding game.

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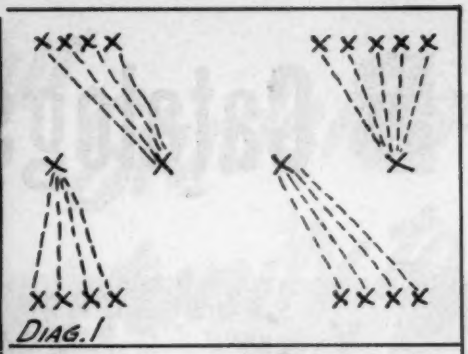
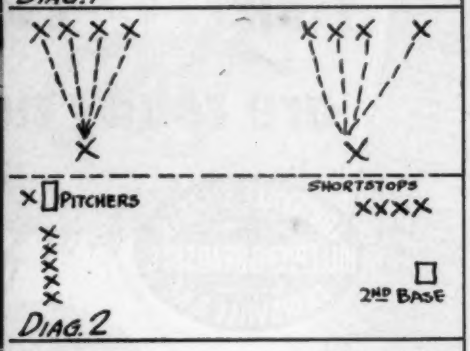
Pre-Season Indoor Drills

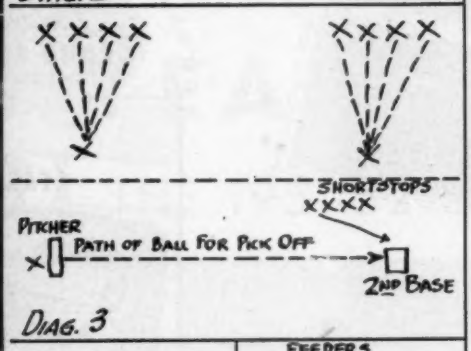
By JAMES SMILGOFF

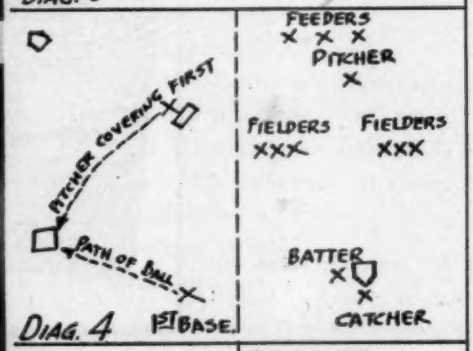
Baseball Coach

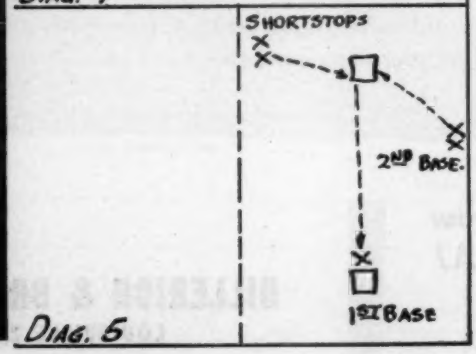
Taft High School, Chicago, Ill.











A major problem which confronts most baseball coaches is that of getting a team ready for game play. This problem becomes more complex when weather conditions prevent the players from going outdoors more than just a few times before a practice games schedule must be met. This necessitates the use of the school gymnasium for practice. It follows that a confined area such as a gymnasium influences limited baseball practice drills.

The following article will endeavor to show how a squad of twenty players may be kept fairly active, and taught to play better baseball through fundamental drills which have been adapted to the size of a small gymnasium measuring 70x50 feet.

It is easily possible for twenty players to warm up by tossing a ball back and forth. However, by providing one baseball for every two players, the boys are kept more active and warm up faster.

After warm-up the squad is divided into four groups and each group has its own pepper game (Illustration 1 and Diagram 1). It is our belief that having more pepper games with fewer players in each group creates more activity for the entire squad.

Occasionally, while the pepper games are in progress the coach meets with the pitchers in the gymnasium office, or it may be the catchers who meet, or the infielders, or maybe the outfielders. Various techniques, plays and problems are discussed and these meetings should be of short duration and very much to the point. It is well for the coach to have his material outlined in advance. Many times at these meetings the drills we are going to practice that same afternoon are organized.

It is possible to have two pepper games on one-half of the gymnasium floor and use the other half for drills. For example, while two pepper games are in progress on the west half of the gymnasium floor the pitchers are working with the shortstops on picking a runner off second base on the

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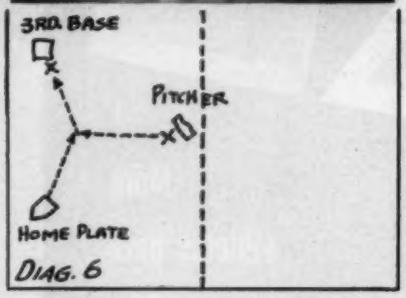


DIAG. 6

east half (Illustrations and Diagrams 2 and 3).

It is possible to have bunting practice on one-half of the floor while the pitcher practices covering first base on a ground ball hit to the first baseman on the other half (Illustration 4 and Diagram 4).

Our shortstops and second basemen work together on teaming up for the double play on one-half of the gymnasium floor while the balance of the squad is engaged in activity on the other half (Illustration 5 and Diagram 5).

Only one-half of the gymnasium floor is used when the catcher and first baseman, or the catcher and third baseman work on handling bunts.

The catcher may work on receiving a pitch-out and picking a runner off first base or third base by using only one-half of the gymnasium floor.

We have our pitcher and third baseman work together on a drill to force an opposing base-runner at third base on a bunt (Illustration 6 and Diagram 6).

Run-downs between the bases may be practiced without disturbing the entire squad. This drill may also be used on one-half of the gymnasium floor.

It is advantageous to divide the floor in half vertically for some drills, while we prefer a horizontal division for others.

Defensive infield play against the bunt is also practiced. In this drill the entire gymnasium floor is used and the outfielders sometimes serve as base-runners, thus keeping the entire squad active.

Before starting regular infield practice we always have the outfielders practice throwing to the plate. While it is true that the distance is short from one corner of the gymnasium to the opposite corner, nevertheless, we practice on the proper techniques of throwing and insist that the outfielders throw hard so that their arms will be in the best possible throwing condition when outdoor practice begins.

One particular fundamental or technique is emphasized at each infield practice session. Sometimes the boys work on fielding the ball out in front of the body, while at other times they work on fielding a ground ball to the infielder's left. At another session we emphasize fielding a ball hit to the infielder's right. There are also drills on getting a quick start on a ground ball, on fielding the slow hit ball and handling the hard hit ball. One of these items is emphasized during each infield practice without interrupting the tempo of the infield session.

Batting practice is our pride and joy. Many coaches are horrified at the thought of having batting practice in a gymnasium, yet we have been doing it for twelve seasons without a major mishap and scarcely a minor one. It is our custom to have either two or three batting groups engaged in batting practice at one time. When we have an experienced squad three groups are used. With an inexperienced squad we have two groups hitting at one time. These batting drills also give our catchers a chance to catch while in full regalia, and they give our pitchers a chance to pitch against hitters (Illustration 7 and Diagram 7).

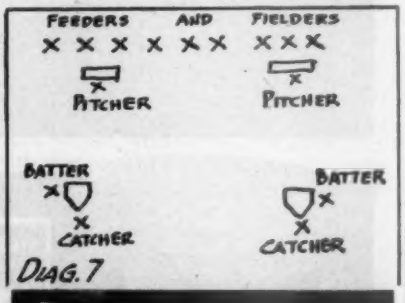
Rubber-covered baseballs, which are slightly lighter in weight than regulation baseballs, are used for these battings drills. Actually, these rubber-covered balls are hard softballs which soften up after being hit for about thirty minutes. These balls are taped with white adhesive when they become soft or when the rubber cover cracks open. This gives flexibility to the ball, and by retaping when necessary a ball may give about two weeks of daily batting practice service. We have our left-handed batters hit with the bat swinging toward the wall in order to minimize the chance of accident. Resin bags for perspiring hands or slippery bat handles are also provided. We feel that there is no more chance of a bat slipping out of a player's hands indoors than outdoors. Oftentimes we play our games outdoors with players and spectators both within easy range of getting hit with a bat that might slip out of a player's hands, yet very few accidents occur. The players closest to the batter are our pitchers who are from fifty to sixty feet away.

The following drills have been prepared on a suggestive indoor practice basis. They are based on dividing the gymnasium floor either vertically or horizontally in order to provide more activity for the entire baseball squad. Many additional possibilities may be worked out by the individual coach to suit his local facilities and team needs.

JAMES SMILGOFF has been a frequent and welcome contributor to these pages. After graduating from the University of Wisconsin he played professional baseball and then became a farm team instructor for the Chicago Cubs. He has served as technical advisor for two movie shorts on baseball and in 1946 was coach under Ray Schalk of the United States amateur team. His teams at Taft have annually been strong contenders for the city championship.

Suggested Drills Using the Vertical Division of the Gymnasium Floor

1. Pitcher covering first base.
2. Pitcher and third baseman teaming together on a bunt to force an opposing base-runner at third base.
3. Catcher throwing over the batter's head to the third baseman to catch a runner trying to steal third base.
4. Catcher working on picking a runner off third base.
5. Pitcher, catcher and third baseman teaming up on breaking up a double steal with runners on first and



DIAG. 7

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third by bluffing a throw to second base and then throwing to third.

6. Catching a runner in a run-down or "trap" between bases.

7. Pitcher working on fielding bunts.

8. Third baseman working on fielding bunts.

9. Bunting drills.

Suggested Drills Using the Horizontal Division of the Gymnasium Floor

1. Pitcher working with the shortstop or second baseman on picking a runner off second base.

2. Second baseman covering first base on bunts.

3. Second baseman and shortstop practicing touching second base on the double play.

4. Second baseman and shortstop teaming up on the double play.

5. Catcher fielding bunts.

6. Catcher working on receiving pitches.

7. Catcher and pitcher teaming on the pitch-out.

Zone Hysteria

(Continued from page 11)

feat. This is probably the reason why those coaches who attack a zone in this manner approach apoplexy when they meet a zone. Such tactics either wind up with an interception, a violation or a long shot. If the team has no good set shot, the outlook is hopeless. Why employ the methods which the zone prefers? It has always been our philosophy in basketball, "to play contrary to the way our opponents would like to have us play."

Then, how should the zone be attacked?

1. In the first place, the offensive patterns which most coaches employ are sufficiently effective to cope with the zone defense even though these patterns may be based on a man-for-man defense. Certainly, they would be better than some hastily devised plan with which the players cannot become adept in one or two practices. Several years ago our team was playing the outstanding team in the nation. We had scouted this team thoroughly and were worried about its strong offense. However, the scouts who watched our team concluded that we used a zone defense (we do not employ the zone) and so our opponent changed his offense completely the week before our game. Result, his team was easily and decisively beaten. In spite of the fact that he had all-American personnel, this personnel could not master a new pattern in a few days.

Another coach was worrying about his opponent because that opponent employed a zone defense. It was a championship play-off. He tried in vain to defeat the opponent by the tactics listed above and lost. As a last resort, he turned to his regular pattern of offense which he stressed against most of the opponents who used a man-for-man. The result was final victory in the remaining play-off games.

Actually the principle of "give and go," screens and post play may be effectively employed against a zone defense.

2. Some pattern of continuity should be employed, in order to be able to determine the characteristics of a defense and to study its movement. During a recent NCAA play-off game, one team used a zone defense for about one-quarter of the game and a man-for-man for three-quarters of the game. However, the opponent of this team either did not have a movement to test the defense or failed to use it. As a result, the opponent did not discover that the team changed its defense from a zone to a man-for-man.

3. There must be penetration of a zone defense in order to combat it successfully. Not only must the offensive players move, but they must move from out in front of the defense (from the center line), to back behind it (to the end line) and vice versa. Such movement keeps the defense busy and develops more opportunities for making mistakes. If the offensive players do not move, they do not present any problems for the defense.

4. The passing must be in time with the defense. Generally speaking, the passing is too fast. As a result, the defense is not given sufficient time to commit itself and to make a mistake.

These four principles present a different emphasis than that commonly practiced. For that reason, greater difficulty than the defense justifies is experienced when teams meet a zone defense. To these four principles must be added a fifth which everyone recognizes as an essential part of attacking a zone.

5. Overload a zone. This means to deploy the players in positions on the court so that one defensive player will be required to guard two offensive players, or so that two defensive players guard three offensive players, or so that three defensive players must guard four offensive players.

The following diagrams demonstrate how these principles may be implemented in a pattern of play. The particular play elements of the pattern are designed to meet the variations that a coach is likely to encounter in a zone defense. For example:

Diagram 1 shows only the continuity which is employed to test the defense, in order to determine its characteristics.

The play shown in Diagram 2 may be used when defensive player, X2, covers the ball at floor positions A and C.

When defensive player, X3, covers the ball at floor positions E and F the play shown in Diagram 3 may be used.

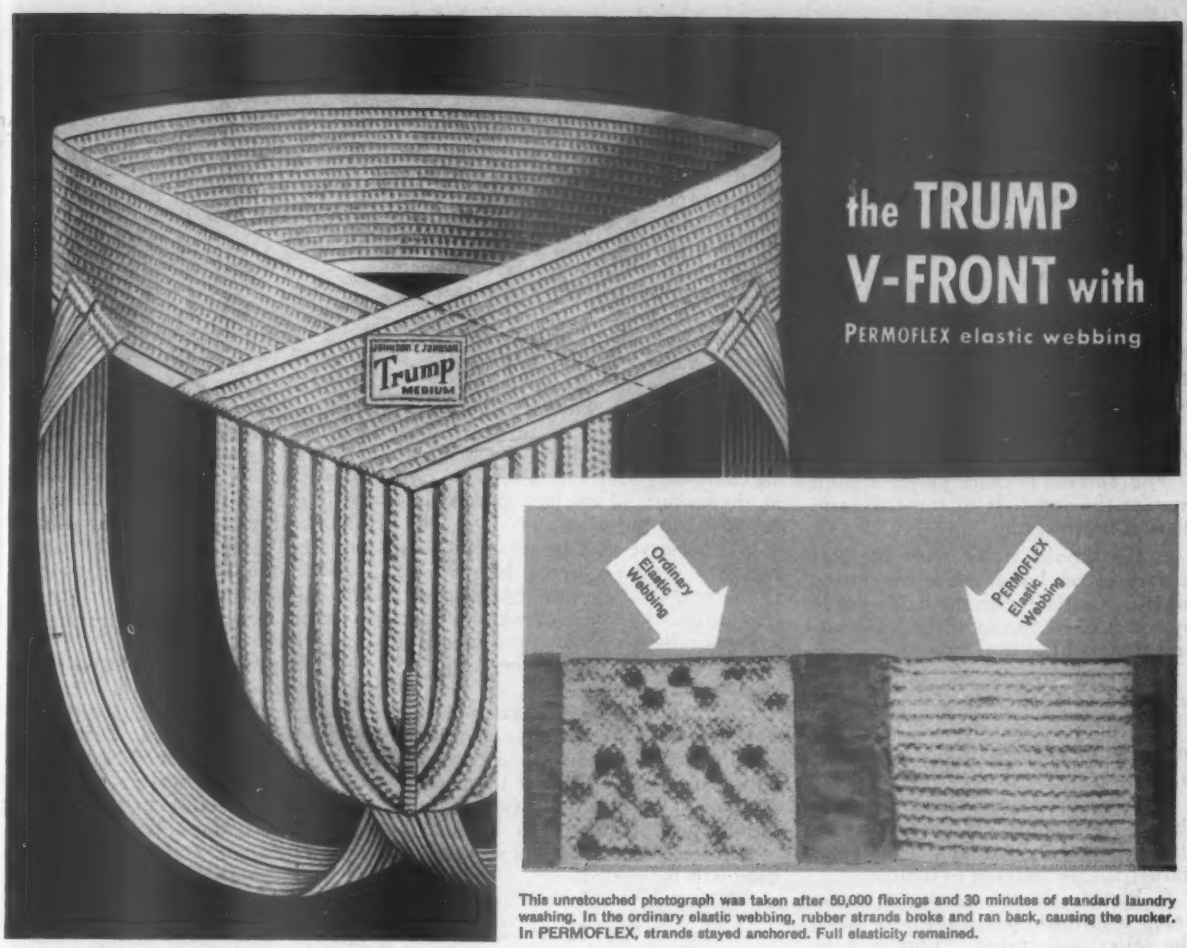
The play shown in Diagram 4 may be used when defensive players, X3 and X4, cover the ball at positions J, K and L.

When defensive players, X3, X4 and X5, cover the ball at positions R, S, T and W the play shown in Diagram 5 may be used.

Diagram 6 shows how a screen movement may be used against a zone.

In each of the diagrams, only one play is shown. This is done for simplicity and in an attempt to present the idea as clearly as possible. It should be evident that many variations and options are possible. It should also be emphasized that unless the movements of the players and the ball are properly synchronized, repeated trials will be necessary before the attack becomes effective. It should be observed that all of the diagrams are built around the continuity which is presented in Diagram 1.

No attempt has been made to classify the type of zone defense. Actually, this is unimportant. The significant point which should be observed is the assignment that is given to each defensive player. If it is known where he moves and what area he covers, then the attack may be directed to capitalize on the weakness which is detected. The continuity of Diagram 1 is designed to give this information, and the play situations which are presented tend to attack the more typical zone defense movements.



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Volleyball Techniques

(Continued from page 15)

5. The timing of the jump with the downward path of the ball is the secret of a successful spike.

Cautions. 1. Eliminate the tendency to broad jump, because height is lost in the jump.

2. Keep the steps short.

3. Avoid too much momentum from the back court toward the net because this will carry the spiker into the net or over the center line.

4. High jumpers from the track squad are potentially good spikers.

The Spike. 1. The player should contact the top half of the ball, and drive it downward.

2. He should strike with the flat surface of his hand, made by closing his fist. Contact with the ball is made by the heel of the hand and the second joints of the four fingers.

3. At the instant of contact, the wrist should be flexed.

4. The arm should be extended overhead to add height, but the elbow is bent.

5. When hitting the ball, the spike should be angled rather than hit straight ahead. An angled spike is harder for the defense to handle.

6. Players should be urged to develop teamwork, particularly between the setter and spiker. This may be accomplished by having them work together in all practice sessions. The setter knows when his set is too close to the net, or too far back. He should call this fact to the attention of the spiker so that the ball may be played safe. Attempting to spike a bad set usually results in the loss of the serve or a point.

Cautions. 1. Hitting the bottom half of the ball results in driving it out of bounds. 2. Poor timing results in driving the ball into the net. 3. Big men tire faster than do small men and lose height in their jump. This also results in balls being driven into the net. 4. Avoid the habit of jumping into the air to hit into an opponent's back court when no spike is possible. If the spiker decides the pass is not right for a spike, he should stay on the floor to hit over the net.

Defense

The Serve. The safest and most accurate serve is the underhand, and the server should observe the following points:

1. He should keep a safe distance back of the line to avoid a foot fault.

2. Bending at the waist keeps the head down, the eye on the ball and adds power to the serve.

3. Contact with the open hand is accurate, but it lacks power. Both power and accuracy may be combined by hitting with the closed fist and the heel of the hand.

4. The server with control should hit the ball to the weakest passer in the back line of the opponents.

5. The serving hand should swing well back and follow through after contact with the ball has been made. By combining this with a forward step at the instant of contact, power may be added to the serve.

6. The serve may be mastered by a majority of the players, but it is a fundamental that must be practiced constantly. It is a good idea to keep a check chart on the percentage of successful serves, their power and accuracy.

7. Occasionally high school players may develop an effective overhand serve which adds a down spin to the ball and is more difficult for the opponents to handle. This type of serve should not be used if it cannot be controlled, or more points will be lost than will be gained.

The Block

The block is a strong defensive weapon, but it must be used carefully since it weakens the whole defensive setup if it does not succeed. The following points should be observed:

1. A block should be used *only* when the defense cannot handle an opponent's spiking.

2. The block should be used *only* when the spiker gets a good setup. If the set is too far from the net, or otherwise inaccurate, the defense must shift rapidly to their normal positions and eliminate the block.

3. Only tall men should block. Short men are ineffective and tend to go into the net.

4. The two-man block should be used whenever possible, since it allows either of the blockers to replay the ball after the block without penalty. This is a situation where two consecutive hits are legal.

5. Blockers tend to drop their hands forward over the net and must be kept back to avoid penalty.

6. Hard spikers often drive through the blocker's hands. To avoid this, the blocker should hook his thumbs together and keep his fingers pointing straight upward.

7. When the two-man block is used, the remaining front line man must be alert for a carom off of his teammate's hands. One of the outside back line men must move forward to cover the exposed portion of the front court (Diagram 6).

Defensive Suggestions

1. When a spike is anticipated, the back line men should have their hands up and ready. A hard spike allows a player no time to raise his hands.

2. Two-hand play of the ball should be stressed for power and accuracy. However, there are times when a player cannot get into position to use both hands. In a case of this kind, the one-hand retrieve should be used. The closed fist should be used and the player should concentrate on getting the ball high into the air. This makes it easier for a teammate to get the ball over the net.

3. Players should learn to play the ball off the net. Again, the secret is to get the ball up high so it may be volleyed over the net. Drills on this maneuver are simple. The ball should be thrown straight into the net and the players should go in for the rebound. Or, the ball may be thrown in at an angle and a player directed to play the angle.

4. To avoid a "sticky" ball, players should be taught to strike the ball cleanly and not follow through. Everything possible should be played with the hands up. When the hands are dropped below the waist and the ball played underhand, or scooped, the chances for a "sticky" ball are increased.

5. Playing the ball with the back to the net is a blind maneuver and little accuracy or ball control results. The players may be taught to pivot around and face the opponents before driving the ball over the net. Playing the ball backwards may result in a "caught" ball.

Terminology

Passer — The player who gets the ball to the setter on the first pass.

Setter — The player who receives the ball from the passer and sets it high for the spiker.

Spiker — The player who drives the ball across the net on the third pass.

"Sticky" ball — Illegal play, where a player's fingers or hand stay with the ball in a follow-through instead of batting it cleanly.

"Caught" ball — Illegal play, where a player holds the ball momentarily before throwing his pass.

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A Good Defense

(Continued from page 26)

In conclusion, let us offer a few hints to help the coach. He should try to have his players shoot free throws when they are in game-like conditions. For instance, he may stop a fast workout suddenly and have all the boys shoot five free throws before heavy breathing, nervous reaction and fatigue have worn off. He may allow the spectators or other players to annoy the free throw shooter, in order that he may become used to verbal interference. It is a good idea to have the boys run backwards and sideways every day to help their defensive coordination. The boys should talk to each other while on defense, and use hand signals whenever possible.

Good practice uniforms are important, since these are used many more times than the game uniforms. Varied color combinations are also desirable for identification purposes. Colored basketball shoes may be used for better recognition on blind passes.

The coach should insist that the practice as well as the game floor be swept just before it is used to insure better traction and to help keep the basketballs clean. Also, a weekly cleaning of all the balls used helps considerably.

Good officiating in practice sessions will also help the boys. Last but not least, the coach should not forget his appearance, actions and the general leadership of his boys.

The Small Weight Man

(Continued from page 28)

The starting stance is unimportant except as it feels "right" to the athlete (Illustration 3). It is suggested that the beginner be taught a three-quarter forward facing position, since from this attitude the leg swing is forward and the typical boy will be able to shift across the circle faster, and be able to arrive in a sound throwing position with less difficulty than from a side facing start.

The putting position should be an open stance, in order to provide room for the all-important hip lead, and with both feet firmly planted on the ground (Illustration 4). Failure to observe this latter condition is a familiar fault of many shot putters, and is the most frequent single error of the light, fast man. As with the similar fault in the discus throw, the small

man is apparently so necessarily concerned with speed that he tends to reverse before the delivery is completed, and the shot is released while the athlete is off the ground. This timing flaw requires concentration on getting the shot away with a line-of-force extending from the ground to the shot itself, through leg, torso, shoulder, arm and hand. Let the reverse take care of itself! This maneuver is merely a technique for maintaining balance, and it is only one of several such devices used by outstanding shot putters. The reverse, if used at all, should come as a late stage of the follow-through (Illustration 5).

The chief difficulty in acquiring the co-ordination called for in effective shot putting, is that during the hop across the circle, while the entire body is moving rapidly forward to the throwing position, the torso must be moving generally to the rear, and specifically downward and backward. As the athlete shifts forward, in other words, he must attempt to land with the shot in position to receive maximum travel distance for acceleration during the delivery, namely, as far back and around as the leg strength of the boy will permit. If this attitude is acquired after the hop is completed, of course, the effort involved in moving across the circle is wasted. It is imperative that the putting position be reached with the upper body already cocked for the delivery.

The actual put must be an explosive effort fusing smoothly out of the shift across the circle. Such concentration of energy is where the light man has his best opportunity of equalizing competition with the heavy athlete, and the importance of long hours of practice in making this mobilization of forces habitual and volitional cannot be overemphasized.

Conclusion

In conclusion, it is a relatively frequent occurrence for the high school coach to discover that his potential weight men are either big but too slow, or fast but too small. If the small candidate is strong — and the boy who lacks upper body and arm strength will not usually turn out for these events — and possesses fast reaction time and fast reflex time, his size may not prove too great a handicap in competition with larger athletes. With sound coaching accent on speed rather than on bulk, fundamental physics provide assistance which can supersede to an amazing extent the highly admirable characteristic, for weight men in particular, or large muscle mass.

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Advanced Stunts on the Parallel Bars

(Continued from page 9)

as far as possible. The purpose of this phase of the stunt is to obtain a maximum swing. After the body passes the bottom of the swing and starts upward the arms start to pull. When the legs are above the bars they spread quickly and the hands give a strong quick pull and then release. This enables the legs to pass under the hands and continue the straddle vault to meet in front of the body in a momentary half lever position.

After the legs pass under the arms, the hands reach downward toward the bars. When they catch the bars in the straight arm cross support position, the body then swings up into the handstand.

Some points on this stunt are as follows: 1. The gymnast should obtain a maximum swing for this stunt. 2. The part of the stunt in which the legs straddle over the bars should be done as quickly as possible. 3. When catching the bars after the vault, the gymnast should try to have his hips forward of his arms. This enables an easy swing to a handstand. 4. This stunt is usually done to a straight arm catch but it may be done to a bent arm catch as well.

NEWT LOKEN won the Big Ten All-Around Gymnastic Title as well as the NCAA title during his undergraduate days at Minnesota, prior to the war. Since reactivating the sport at Michigan in 1947 his teams have had outstanding success. He is a tireless worker for the sport of gymnastics and has authored numerous articles, and five books, as well as serving as technical consultant on the Athletic Institute's slide film.

Moore

From an ordinary swing in a straight arm cross support position the Moore, (Series D), is done on the back end of the swing. The Moore that is shown in the pictures is done on the left bar, but it may be done on either bar. As the body passes the hands, the hips are raised high into the air in a jackknife position. As shown in the pictures, the right hand is brought back to the left bar and the Moore is thus executed. The shoulders remain forward of the hands, while the legs are swung on the outside, and the hips remain high throughout the stunt.

As the legs pass over the other end of the left bar, the left hand reaches for the right bar as is shown.

Some pointers on this stunt are as follows: 1. The bar on which the Moore is done should be padded with a tumbling mat or a special parallel bar pad. This will prevent scraping or bruising the shins during the early learning stages. 2. This stunt should not be rushed. 3. The gymnast should not lean forward too far when his legs are outside the bar. 4. The gymnast should take his time about the last change of hands. He should ride the trick out before shifting his hand. 5. Throughout the stunt the hips should be kept high.

We would like to thank Pete Barthell for his time and effort in the picture-taking task and also Marv Johnson, Leon Krumbholz and Harry Luchs for their comments and suggestions on the article.

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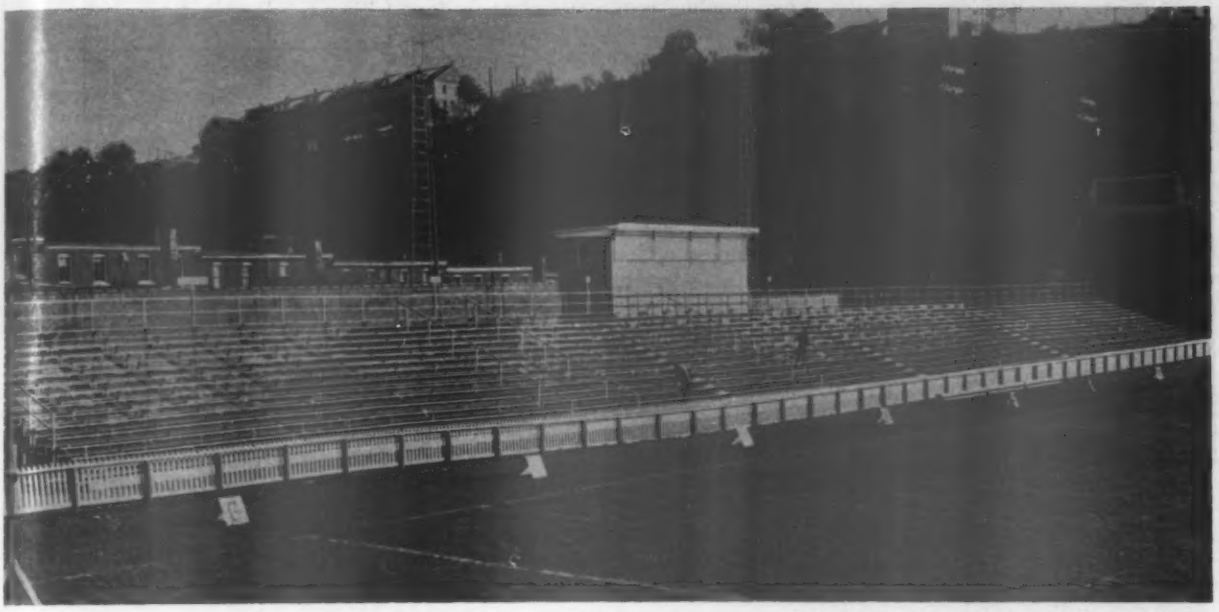

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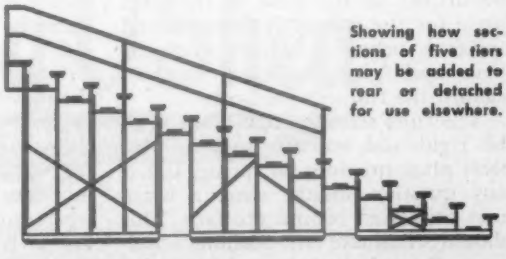

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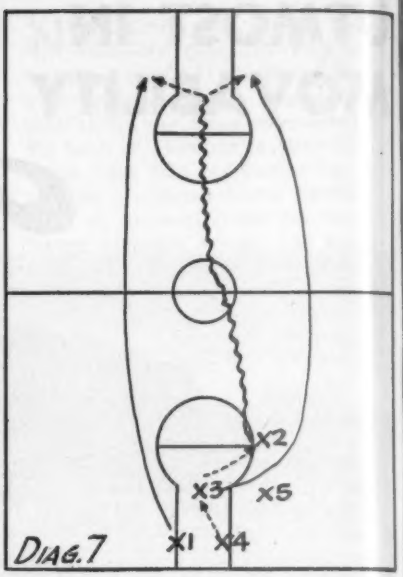
A Zone Variation

(Continued from page 28)

not shift back from the forward position to a guard position on the weak side. Diagram 6 shows the weak-side forward, X1, out of position. Sometimes the weak-side forward is lazy and does not shift back, or he may be too anxious to go down on a fast break. When the weak-side man fails to shift back, the offensive guard comes around and receives a pass from the pivot man for a shot.

Diagram 7 shows one phase of our fast break. Since the center's position on the zone varies very little, we always make our initial pass to the center, X3. He, in turn, will pass to the strong-side forward, X2, who dribbles into the center lane with the weak-side forward, X1, and the center going down opposite sides. The man in the middle has three options: he may dribble in, pass to the center coming down the side, or he may pass to the forward coming down the opposite side from the center.



DIAG. 7

It will be noticed that all of the diagrams shown are outlined for the right side of the floor, but the same situations prevail on the opposite side of the floor.

EDWARD CHUCK graduated from Parsons College, and while in the service played both basketball and baseball. On the San Antonio Air Base team with Chuck were Howie Pollet and Enos Slaughter. In four seasons at Grand Junction, his basketball teams have won 70 while losing only 14, and his baseball teams have 58 wins against 13 losses. In baseball his teams have won four sectional titles, while his basketball teams have won one sectional and one district, in addition to being last year's state champs.

Make It Yourself

(Continued from page 10)

of the block is made of steel plate. Our blocks were made out of a piece of scrap that we found in the bus garage. Each block requires a piece of steel about 5 inches wide, 15 inches long and approximately ⅜ of an inch thick. The steel should be heated 7 inches from one end and turned back until it rests at an angle of approximately 60 degrees to the base. A piece of plywood 6 inches by 5 inches by ½ inch is the next item required. Holes for ¼ inch bolts should be drilled at diagonal corners in both the steel plate face and the plywood, countersinking the holes in the plywood so the bolt heads will be flush with the wood. The plywood should be attached tightly to the face of the steel plate. Then ⅜ inch holes should be drilled in the base of the steel plate for the spikes. We have found spikes 6 inches by ¼ inch work the best and give sufficient support against the runner's push-off.

The rules state that the block must be rigid and without spring. This steel plate provides no spring, but if any question should arise, a brace may be placed behind the face. This should eliminate all possible objections. One of our sprinters, while using blocks of this type, won the 100 and 220 titles in our sectional meet. These blocks have been tested under all weather conditions, on various types of tracks and they have always worked well.

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This cart will make the job of lining the athletic field an easy task. The secret, of course, is the use of a garden spray, which may have either a three or five gallon capacity. Instead of pouring on the lines, either wet or dry, we spray them on. Our cart was constructed with this thought in mind.

We have used both lime diluted in water (whitewash) and the new plastic marking paint. The latter type seems to work the best with the spray and is less expensive in the long run. In either case, we mixed the lime or the plastic paint with water in a bucket and then placed the mixture in the spray tank. With a little pumping we were ready to spray our lines on. When the spray was purchased we received two types of heads, one for a fine spray and another for coarse. The coarse spray was used when laying the lines and the fine for touching up the lines whenever and wherever needed. We used the usual procedure of laying down a taut string and then ran our nozzle as close to it as possible. The closer the nozzle is to the ground, the finer the line and the better the results.

In building the cart, the plans should be self-explanatory. All of our lumber was 8¼ inches by ¾ of an inch and we cut it into the desired lengths. Actually, none of our dimensions must be adhered to strictly, and any lumber which is approximately this size may be used. Three cross-pieces connected the two sides; two narrow ones and a larger one which also helps support the tank. The middle support has a shelf attached to it and the bottom of the tank rests on this shelf. We made the handles of the same lumber, but pipe handles will work as well, if not better. The legs were made of 2 inch by 2 inch stock and attached to the sides by stove bolts so they could be raised or lowered. Also, two large L screws were placed on the bottom of the side pieces to keep the legs from dropping when not in use. The wheels and the axle came from an old wa-

ANDREW GRIEVE took his undergraduate work at Colgate and Villanova, playing football and basketball at these schools. During the war Grieve was in the V5 program and played football at North Carolina Pre-Flight. Following his discharge from the service he received his B.S. degree from NYU and then coached at Wellsburg, New York. Two years ago he moved to Van Etten where he coaches football, basketball and baseball and teaches physical education.

gon; any wheels approximately this size will work.

By sawing off one thread of a U bolt, we made a clamp to hold the nozzle close to the ground. The remaining thread was placed through a hole drilled in the bottom of the crosspiece and the hose was held firm by tightening a nut on this projecting thread. This hose must be removable, since the tank should be cleaned immediately after it is used to prevent clogging.

It is our belief that this spray line marker will be found to be fast, economical and clean. The cart was made entirely from extra scrap wood; the wheels were brought in by one of our students. Thus, the only expense was the cost of the tank.

Fundamentals

(Continued from page 12)

calls a number. The boys with this number compete with each other and break for the ball, the first man receiving the ball automatically places the second man on defense. Another number is called immediately and the two offensive men try to work the ball in against the defensive men. As many as four pairs of players may be scrimmaging at one time.

This exercise is similar to "hunch" and it is an excellent conditioner. During this drill the players' reaction time, proper defensive position, ball control, screening, passing, etc., may be observed. The whistle is blown when a foul is committed, when the ball goes out of bounds, or when a basket is made. When the ball changes hands on a rebound, free ball, or pass interception, the team that lost the ball is on the defense right away. This game is quite exhausting, there-

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fore, the boys should not play it longer than ten minutes at a time. The tempo of the game may be appreciably slowed up by having the boys think of good ball-handling. Also, they will benefit materially if they minimize the dribbling and try to "set it up".

Diagram 4 shows a drill on the lay-up shot. Competitive groups are lined up, (about six or seven players in each squad) on a chalk line near the intersection of the sideline and the free throw line if it were extended. The players are told that each one in turn is to dribble in the hole and make a lay-up shot. Then the group as a whole will try to make as many baskets as possible in three minutes. Before the competition actually starts the boys should warm up.

On the command, "Go", X1 dribbles in, takes a lay-up shot, recovers the ball, and then passes it to X2 who remains behind the chalk line until he receives the ball. If any player misses the lay-up shot he has to drop out of the line.

It is comparatively easy for most players, after they have had some instruction and practice, to make a lay-up shot following a dribble. However, when the pressure is on under competitive conditions, it is surprising how few boys are left in this line after two minutes. Of course, the time for this shooting contest may be changed to two minutes or even one minute, depending upon the ability of the players.

HEBER NEWSOM has been at the University of California for twenty years where he teaches courses in football and basketball officiating, basketball coaching and instructs basketball activity classes. This article was written in response to requests received by the author for information on how to make fundamentals interesting for physical education classes.

In Diagram 5, we have a dribble relay which the boys always enjoy. This contest gives an indication of the player's dribbling ability and shooting skill under pressure. If the coach has only two full courts and six squads, the relays will have to be conducted on an elimination basis.

Each squad of five or six contestants is lined up in single file under the basket. When the whistle is blown, X1 starts to dribble down the court around obstacle 1, (a chair, shirt, or chalked circle), then around obstacle 2, and on to the basket at the other end of the court. He then must make a lay-up shot before returning to the starting point. On the return trip he dribbles around obstacle 2, then obstacle 1, and back to the basket from which he started. X2 cannot start his dribble until X1 has made his lay-up shot at the starting basket. When the last player on the squad has finished, all members of the group will stand up straight; each player will place his hands on the shoulders of the man in front. This procedure is followed so that the winner may be more readily determined.

Three of these drills or contests involve the keeping of scores. Perhaps it is a good idea for the captain of each group to keep the score for his members, although cards and pencils are necessary for the co-ordination test. The boys are not any more prone to cheat than are golf players.

There are many other games of the competitive type which are interesting and which make the players see the importance of practicing and working on fundamentals. Also, the instructor might be able to make some of the players understand better the adage, "Practice does not make perfect, it is how you practice."

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High School Track

(Continued from page 31)

ture at the collegiate level. For a number of years, the top collegiate performers have come from the Pacific Coast, the Southwest, the Middle Atlantic area and the Middle West. It will be noted that the states from these areas comprise the "top ten." Ohio, Illinois, Indiana and Iowa are all neighboring states and rank in that order. New York, Pennsylvania and New Jersey supply most of the material for the perennial Eastern track powers. The Big Seven Conference has always been a powerful track conference and, consequently; it will be noted that four of the six states which comprise the conference rank eleventh, twelfth, fourteenth and fifteenth. A fifth state, Iowa, ranks sixth.

Last year's meets continued the onslaught on the records, with 45 new records going into the books. Outside of the 1946 meet, when only 10 new records were set, each succeeding year the number of records broken has been in the forties. The all-time record-breaking year was 1948 when 49 new marks were recorded. Tennessee led the assault this past spring with four new records. Over the six-year period, Virginia holds the distinction of setting the most marks in one year, when six records went on the books for 1948. A year ago, at this writing, Missouri and New Mexico were tied with 10 new records in the five-year period. New Mexico moves into undisputed first place with 13 broken records and Virginia moves into a tie with Missouri with 10 new marks. California, Florida and Wisconsin have each written nine new marks into the books.

Only one event in this year's meet exceeded the previous best marks, and that was in the high jump when Anderson of Windsor, Colorado jumped 6'6", an even inch better than the previous height. The winning time or distance was better than the average winning time or distance in the preceding five meets in nine of the thirteen events. The events that were better with the amount better are shown in parenthesis as follows: high hurdles (.04"); the 100-yard dash (.08"); mile (1 3"); 440-yard dash (.6"); 220-yard dash (.2"); shot put (1'10"); high jump (1 5/6"); discus (6'1⅜"); broad jump (¼"). The four events which were poorer than the previous average are the 880 relay (1.3"); 180 low hurdles (.2"); 880 run (1.9") and the pole vault (½").

This will serve to explain the accompanying track meet chart. New records are indicated by a star, either white or red. The best performance is indicated by a solid red block. When two or more states tie for the best performance it is indicated by a lighter red block.

For a number of years it has been our pleasure to print the official High School Honor Roll as compiled by E. A. Thomas for the National Federation. It is interesting to note that of the ten boys named to the honor roll in the high jump, seven are from Los Angeles high schools. Jefferson High School alone had three jumpers who cleared 6'4". All totaled, California placed 45 on the honor roll, or better than one-third of the total of 122 were from California.

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Sliding Zone Defense

(Continued from page 13)

special emphasis should be placed upon the speed required by X3 in covering the corner and on X4 returning from the side court position to the middle man position on the base line. X1 must react immediately and cover the side court position or the offense will get an unimpeded set shot from this position.

Diagram 5 shows the change in sliding assignments if the ball is passed directly from the front court area into the corner, (omitting the pass down the side). In this case, the left side defensive back line man is in position to cover, while in the play shown in Diagram 4 he was not in the most advantageous position to cover the corner area, but X3 was in position to cover. The other defensive men are in the same relative positions as they were in Diagram 4. Thus, the direct pass to the corner involves a change of assignment only for X3 and X4.

Probably one of the greatest problems in zone defense play is the method of covering the pass in to the pivot man. Regardless of where the pivot man stations himself the three back line men always form a defensive triangle, with the apex of the triangle being the location of the pivot man.

There are just two fundamental rules used in this defensive formation to cover passes to the pivot man:

Rule 1. All passes coming in to the pivot man from either the left or right side court areas, or from the left or right front court areas are covered by the middle back line man, X3. X4 and X5 form the base of the defensive triangle while X1 and X2 protect the sides.

Rule 2. All passes coming out of the left corner to the post are covered by the left back guard, X4, while X3 and X5 form the base of the defensive triangle. All passes coming out of the right corner are covered by X5 with X3 and X4 forming the base of the triangle. X1 and X2 protect the side court areas.

Diagram 6 shows the post set in the center of the court, while Diagram 6a shows the post set to the side of the key-hole.

Diagram 7 shows how the players cover passes from the left corner in to the pivot man. Diagram 7a shows coverage when the pass comes from the right corner in to the pivot man.

The slides shown in Diagrams 2, 3, 4 and 5 cover situations where the ball is on the left side of the court. When the ball is on the right side of the court the same basic positions are maintained. The defense uses the rubberband action and swings around to the opposite side of the floor.

One of the major criticisms of a zone defense has been the inability of the coach to place individual blame when an opponent scores. The 2-3 sliding zone defense functions like a man-for-man defense, in that blame may be placed on the individual if a slide is missed. The use of a zone defense often enables a weaker team to force the opponents to play their style of game and may give them a chance to win a game. In addition to trying to build a diversified offense, we feel that it is worthwhile to build a diversified defense.

JAY McWILLIAMS graduated from Penn State in 1937 and following high school coaching in Pennsylvania he served with the 11th Airborne Division. Following the war he coached the line for three years at V.M.I. McWilliams also coaches the line at Alfred and has authored football and basketball articles for us in the past.

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Survey of Track and Field Facilities

(Continued from page 22)

100-foot runways should be ample.

6. *Should both the pole vault and broad jump runways and the pits be arranged to permit use, if necessary, from two sides?* An overwhelming majority of the coaches (86.4 per cent) answered this question with a "yes". One Middle Western coach stated that there were desirable and undesirable features either way. The percentage of "yes" votes by sections is as follows: Middle West 97.0; East 85.7; South 77.7; West 72.0. A Georgia coach stated that the dual arrangement of pits and runways was merely an extra convenience. An Eastern coach wanted the dual arrangement for practice pits, but not for the pits used in meets. A New York coach said the dual arrangement was a *must* for the pole vault and *optional* for the broad jump. Several coaches pointed out that the dual arrangement was desirable but not absolutely necessary. Along the same line, an Ohio coach pointed out that the dual arrangement was ideal, but that 95 per cent of the present fields didn't have it. On the other hand, a number of coaches made their "yes" answer more emphatic by stating "definitely," "a must," etc.

7. *Should runways follow the same general construction as the running track?* Slightly better than three-fourths of the coaches felt that the runways should follow the same general construction as the running track. Those who answered "no" to this question were asked to describe the manner in which the construction should differ. Seventeen coaches indicated the runways should have more clay binder. Eight coaches wanted the runways built up from ground level. Seven stated that the construction did not need to be as deep. Six preferred that the runways be crowned, while two wanted all-weather runways of black top or concrete.

8. *What is the best take-off surfacing for the high jump?* In answering this question, 18 different materials or combinations of materials were mentioned. Those materials indicated by two or more coaches, the percentage of times mentioned in each section and the totals are shown in Table No. 3.

TABLE 3
Frequency of Mention of Material for High Jump Take-Off

Material	% E.	% M.W.	% S.	% W.	% Total
Cinders and clay	58.0	40.0	31.3	25.0	39.4
Clay	19.3	20.0	21.7	29.1	21.7
Cinders and loam		10.7	15.6	08.3	09.2
Cinders	03.2	09.2		04.1	05.2
Grass	03.2	07.7	06.2		05.2
Black top or asphalt	06.4	03.1	06.2		03.9
Sand, clay, cinders	03.2		09.4		03.9
Dirt	03.2	03.1	03.1		02.6
Wood		01.5		04.1	01.3
Sand and clay				08.3	01.3

A Southwestern coach mentions the use made of calcium chloride treated dirt in his locality. A Connecticut coach prefers wet clay. A number of coaches stated they preferred clay, but due to rainfall were forced to mix cinders with the clay for drainage purposes. A Nebraska coach uses 65 per cent clay, 20 per cent cinders and 15 per cent oil loam. A Kansas coach mixes cinders and clay to form a paste and then lets it dry. Over in Ohio, one coach scarifies the clay with rakes, sprinkles in sawdust and then rolls the take-off area. The insulation material used by one coach is "Celotex" which is weather-treated. The material is cut into three-inch wide strips and bolted together. He uses this same material for his broad jump take-off.

9. *Realizing that, of necessity, certain field events must face into the sun, please rank the following field events by assigning Number 1 to the event most affected by the sun down to Number 7 for the least affected.* The answers to this question were compiled by using the weighted method. The field events with the lowest point total were the most affected by the sun. The results for the four sections and the totals are shown in Table No. 4. Also shown is the average.

TABLE 4
The Effect of Sun on Field Events

Event	E.		M.W.		S.		W.		Total	
	Pts.	Avg.	Pts.	Avg.	Pts.	Avg.	Pts.	Avg.	Pts.	Avg
Pole vault	40	1.48	104	1.73	61	1.85	32	1.60	237	1.69
High jump	63	2.33	143	2.38	67	2.03	43	2.15	316	2.25
Broad jump	104	3.85	195	3.25	106	3.21	79	3.95	484	3.45
Javelin	102	3.77	239	3.98	134	4.06	81	4.05	556	3.97
Discus	128	4.74	289	4.81	163	4.94	97	4.85	677	4.83
Shot put	165	6.11	330	5.50	189	5.72	113	5.65	797	5.69
Hammer	156	5.77	369	6.15	204	6.18	114	5.70	843	6.01

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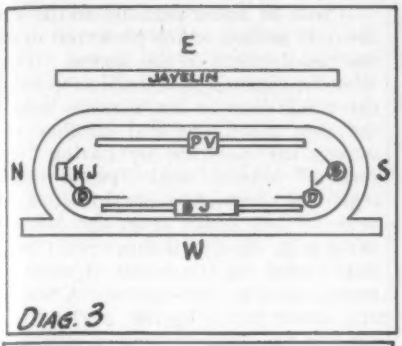
It is interesting to note the marked agreement among the coaches on the pole vault and high jump. In both instances 84 per cent of the coaches marked these two events either Number 1 or 2. Better than six out of ten marked the pole vault Number 1. It is also interesting to note that the East placed the javelin ahead of the broad jump in regard to the affect of the sun. The hammer throw event is not held to any extent outside of the East so it is not surprising that the other sections placed it as the one least affected by the sun. From this question, it may be summarized that special attention should be given in the arrangement of field events to the pole vault, two jumps and javelin in relation to the sun.

10. *The questionnaire contained an outline track layout, similar to that shown in Diagram 3. On it the coaches were asked to place the field events where they felt they would be most desirable.* We hoped from this question to be able to print the four or five most popular layouts. However, no similarity of layouts could be observed. For example, out of 28 layouts submitted by Eastern coaches, no two were alike. Instead, we have combined the results and list for each field event the four most popular locations. It should be pointed out that a large number of coaches used a combined set of runways for the pole vault and broad jump, thus explaining the number of votes for these two events.

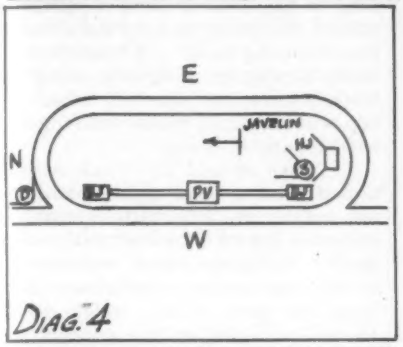
TABLE 5
Location of Field Events

Broad Jump	
Parallel to west side	93
Parallel to east side	33
Across south end	3
Across north end	3
Outside of infield	3
Pole Vault	
Parallel to west side	81
Parallel to east side	40
Across south end	5
Across north end	4
High Jump	
South end	42
North end	36
Center of west side	20
Southwest corner	8
Shot Put	
Southwest corner	29
Center of south end	17
Outside of field south	15
Outside of field north	15
Discus Throw	
Outside of field north	25
Southwest corner	21
Northeast corner	21
Outside of field south	10
Javelin Throw	
Center of infield	66
Outside of infield	17
East side of infield	16
West side of infield	3

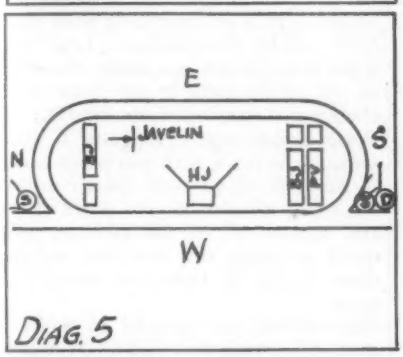
In the hammer throw, 26 coaches indicated a separate field, and only two placed the event inside of the infield. Diagram 3 represents a com-



DIAG. 3



DIAG. 4



DIAG. 5

posite of the leading locations as represented in the tables above. Diagram 4 represents a composite of the second locations and Diagram 5 a composite for the third locations. A number of coaches used an arrangement that had all three jumps along one side. For example, the high jump was in the center, with the pole vault and broad jump running to either end with their own pits.

Maintenance

1. *When should the track be top dressed?* Altogether fifteen different answers were received for this question. The four answers receiving the most number of votes, the percentage of these answers in each section and total are shown in Table No. 6.

TABLE 6
Time to Top Dress the Track

Time	E.	M.W.	S.	W.	Total
Fall	54.1%	60.6%	54.2%	45.8%	53.4%
Spring	33.3	19.6	40.0	20.8	27.1
Summer		08.2	05.7	08.3	05.5
When needed	08.0	05.0	02.8	04.1	05.5

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It will be noted that the South was the only section which preferred to do the top dressing in the spring. Two Western coaches preferred to top dress the track four to six months before the first meet. Several coaches answered the question by stating "annually," several said "every other year" and one said "every three to four years." One coach from the Middle West said, "In fall if there is no football traffic on the track; if there is traffic, then in early spring." A Southern coach says, "Spring is the ideal time to top dress if there is sufficient rain in the spring to keep the dressing from blowing away." A Southwestern coach is experimenting with oiling the track with crank case oil, which he says will eliminate much watering and need for top dressing.

2. *How should the track be wet down?* Better than eight out of ten use either an automatic sprinkling system or sprinkle by hose with a fine spray. A Kansas coach recommends letting the water come down high from the spray nozzle, never direct. Eleven per cent of the coaches use water carts or a water tank with automatic spray attachments. Less than 5 per cent do not wet down the track at all, while only 2 per cent use a chemical such as calcium chloride. A Washington coach suggests a pipe around the track with pin point holes. A number of coaches specified that the track should be wet down daily, and almost all of the coaches were quick to point out that the wetting down should be light and with a fine spray.

3. *When, in relation to a meet, should the track be wet down?* Again, the easiest way to show the answers is by means of percentages which indicate each answer. The results are shown in Table No. 7.

TABLE 7

Time for Wetting Down the Track

Time	E.	M.W.	S.	W.	Total
Evening before meet	21.7%	37.5%	34.1%	31.8%	33.1%
Day before	34.7	19.6	29.7	22.7	25.0
Morning of meet	26.1	16.1	17.6	27.1	19.8
Two days before meet		10.7	17.6		08.8
Two hours before meet		05.3	03.0	04.5	03.6
24 hours before	04.3	05.3			02.9
Afternoon of the day before	08.8	01.8			02.8
3 to 4 hours before		01.8		09.9	02.8
1 hour before	04.3			04.5	01.4

It will be noted that 65 per cent

of the coaches preferred wetting the track down sometime during the day before a meet, while better than one-fourth of the coaches preferred wetting it down sometime during the day of the meet. A number of coaches were quick to point out that the time depended upon local conditions, such as wind, humidity, and drainage. Closely related to these, was the condition of the track itself, as several coaches pointed out. An Iowa coach recommends wetting down the track the evening before a meet and the morning before practice. A highly successful Ohio coach doesn't believe in wetting down the track at all. A Southern coach lets the water run on the upper level of the track two days before a meet, until such time as the water runs in a thin sheet over the track.

4. *How long before a meet should the track be rolled?* The table method, with percentages, is used to record the answers to this question. These results are shown in Table No. 8.

TABLE 8
Time for Rolling Track

Time	E.	M.W.	S.	W.	Total
Day before	22.2%	38.6%	42.8%	47.3%	38.3%
Morning of meet	18.5	22.8	34.2	21.0	24.1
1 to 2 hours before	29.6	22.8	14.2	31.5	22.7
3 to 4 hours before	18.5	08.7	08.5	05.2	07.8
While still moist	07.4	01.7			04.2
Prior to wetting down	03.7	01.7			01.4

Whereas, 65 per cent of the coaches preferred to have the track wet down the day prior to the meet, 54.6 per cent wanted the track rolled the day of the meet. Several took the opportunity to remark that it should be rolled as close to meet time as possible. On the other hand, a number of Southern and Western coaches remarked that a track should not be rolled, in fact, almost a fourth of the Western coaches felt that way. Again, a number pointed out that the condition of the track depended on whether it should be rolled or not.

5. *Do you favor dragging the track with a screen drag?* Fourteen coaches stated a preference for brushing or drags made of brushes; two coaches mentioned wood floats; two mentioned blade drags and one used a fiber matting. Regardless of the type of drag, 88 per cent favored dragging the track, mainly for the purpose of filling holes, as so many pointed out. Of this number, 80 per cent favored dragging the track before rolling, 16 per cent after rolling and 4 per cent both before and after.

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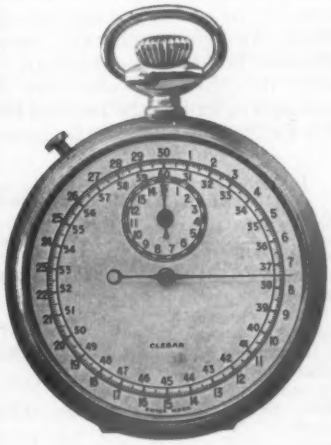

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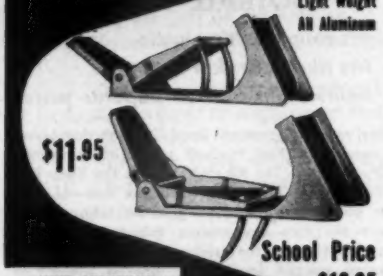

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General

The following general questions were included in the questionnaire because they are subjects frequently discussed whenever track coaches gather.

1. *Do you feel that the straightaway should be eliminated and all races over* 120 *yards be run around the curve?* This question was included at this time because of the approaching Olympics. The 200 meter dash and longer races in the Olympic Games are run around the curve. Seventy-eight per cent of the coaches are opposed to the elimination of the straightaway. The sectional averages agree with the national average as per the following: Middle West and West 76 per cent; South 78 per cent and East 86 per cent. A California coach summed up the arguments of those favoring the elimination of the straightaway when he said: "My answer is partly influenced by a realization that in track we are being faced with the necessity of increasing spectator appeal, and anything to bring the action right in front of the better seats will improve attendance." In the same vein a Middle Western coach advocated a straightaway down the middle of the infield for the high hurdles. Many a coach emphasized his feeling when voting "no" by using exclamation marks or stating, "definitely not," etc.

2. *What are the disadvantages, if any, of having a football field inside the track?* As was to be expected, this question brought some very caustic comments; yet only two-thirds of the coaches thought there were any disadvantages in having the football field inside the track. The most frequently mentioned disadvantages are shown in Table No. 9.

TABLE 9

Disadvantages of Football Field Inside Track

Disadvantage	E.	M.W.	S.	W.	Total
No disadvantage	52.7%	31.8%	21.1%	40.0%	35.1%
Arrangement of field events	16.6	21.2	26.3	28.0	23.0
Conflict with other activity	08.3	06.0	07.9	08.0	07.3
Football crowds hard on track	05.5	06.0	05.2	08.0	06.1
Shot and discus dig up field	08.3	06.0	07.9		05.4
Reseeding in spring		09.1	05.2		04.9
Spring football practice		07.5	07.9	04.0	04.9
Interference of goal posts		03.0	07.9		02.4
Crown on football field	02.7	03.0			01.8

3. *How far back from the outside edge of the outside lane should the stands be?* A number of coaches pointed out that the distance the stands should be away from the outside lane depended upon the sight line from the top of the stands. Several other coaches suggested the stands be placed at an oblique angle to the track. For the 151 coaches specifying a distance, the average distance was 13.4 feet. The Eastern coaches had a surprisingly large average of 18.2 feet; whereas, the answers of the Middle Western coaches averaged only 11.6 feet. The average for the South was 12.8 feet and for the West 13.2 feet.

4. *How many tiers high should the judges' and timers' stand be?* The size of the meets held should determine the height of the judges' and timers' stand as a number of coaches pointed out. Another determining factor is the width of the track according to lanes. Some of the coaches preferred placing the judges and timers up in the stands; particularly was this noticeable in the Middle West area. Table No. 10 shows the frequency of answer for the number of tiers high for the judges' and timers' stand.

TABLE 10

Number of Tiers

No. of Tiers	E.	M.W.	S.	W.	Total
2 Tiers	%	01.9%	06.1%	%	02.2%
3 Tiers	25.9	18.8	15.1	04.6	17.2
4 Tiers	18.5	22.6	27.2	31.8	24.4
5 Tiers	18.5	24.6	15.1	27.2	21.5
6 Tiers	37.1	18.8	30.3	31.8	27.5
7 Tiers		07.6	03.1	04.6	04.4
8 Tiers		01.9	03.1		01.4
10 Tiers		03.8			01.4

5. *What do you feel should be the minimum distance from the finish line to the end of the track?* The West averaged 67.1 feet; the South 68.8 feet; the Middle West 72.9 feet and the East 74.1 feet, with the total average being 71.3 feet. The interesting thing in these results is that the East and the Middle West, the areas where indoor track with its limited space flourishes, demanded longer distances from the finish line to the end of the track.

6. *Assuming that you place the pole vault and broad jump runway parallel to the track, how far from the track should they be?* This question received a wide range of answers as witness the spread of almost 6 feet between the averages of the West and East. The averages are as follows: East 19.3 feet; South 17.2 feet; Middle West 13.6 feet and West 13.4 feet. The national average was 15.5 feet.

This concludes a rather comprehensive questionnaire on track and field facilities.

Our Football Offense

A year ago this past September, we presented a new type of coverage of football offenses, in that we had four or more members of a particular staff cover their specialities as related to the total offense. This was done for three reasons: First, because 1500 to 2000 words is far from ample to cover anything as complicated as today's football offenses. Second, because end play, backfield play and line play have to be closely co-ordinated into a total offense. Third, because of the growing popularity of this type of coverage, as evidenced by the selection of two or more coaches from the same school to comprise the coaching school staffs.

In trying this experiment we departed from the usual custom of coaching magazines in presenting as varied a range of articles as possible. The enthusiastic reception of these articles prompted us to continue this type of coverage.

In selecting the teams we tried to cover as wide a range of offenses as possible. The success of the four teams this past season was so outstanding that we would like to list their records.

Illinois (September 1950) — won 8, lost none and tied 1. Big Ten Champions and participants in the Rose Bowl.

Texas Christian University (May 1951) — Southwest Conference Champions and participants in the Cotton Bowl.

Michigan State (June 1951) — undefeated and ranked the Number 2 team of the nation by both the Associated Press and the United Press.

Maryland (September 1951) — undefeated and champions of the Southern Conference as well as participants in the Sugar Bowl.

Support the Olympics

WE have our Voice of Freedom, the Marshall Plan and highly paid propagandists in the State Department—all attempting to sell our form of government abroad. To our way of thinking, a group of our fine American athletes will do a better sales job than any of the above-mentioned attempts. True, our athletes are better fed and better coached than those of the rest of the world, but it goes deeper than that. It goes right back to our fundamental concept of government which encourages competition in our everyday living.

Most of the other Olympic teams are supported out of state funds; whereas, our Olympic teams are supported entirely by voluntary contributions. This is also in keeping with our concept of government as opposed to the socialized systems found in other countries.

Opponents of the Olympics, to the contrary, we feel that the Olympics are a great avenue for better understanding among the nations of the world.

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JANUARY, 1952

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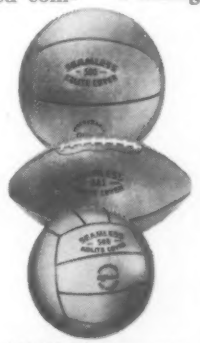

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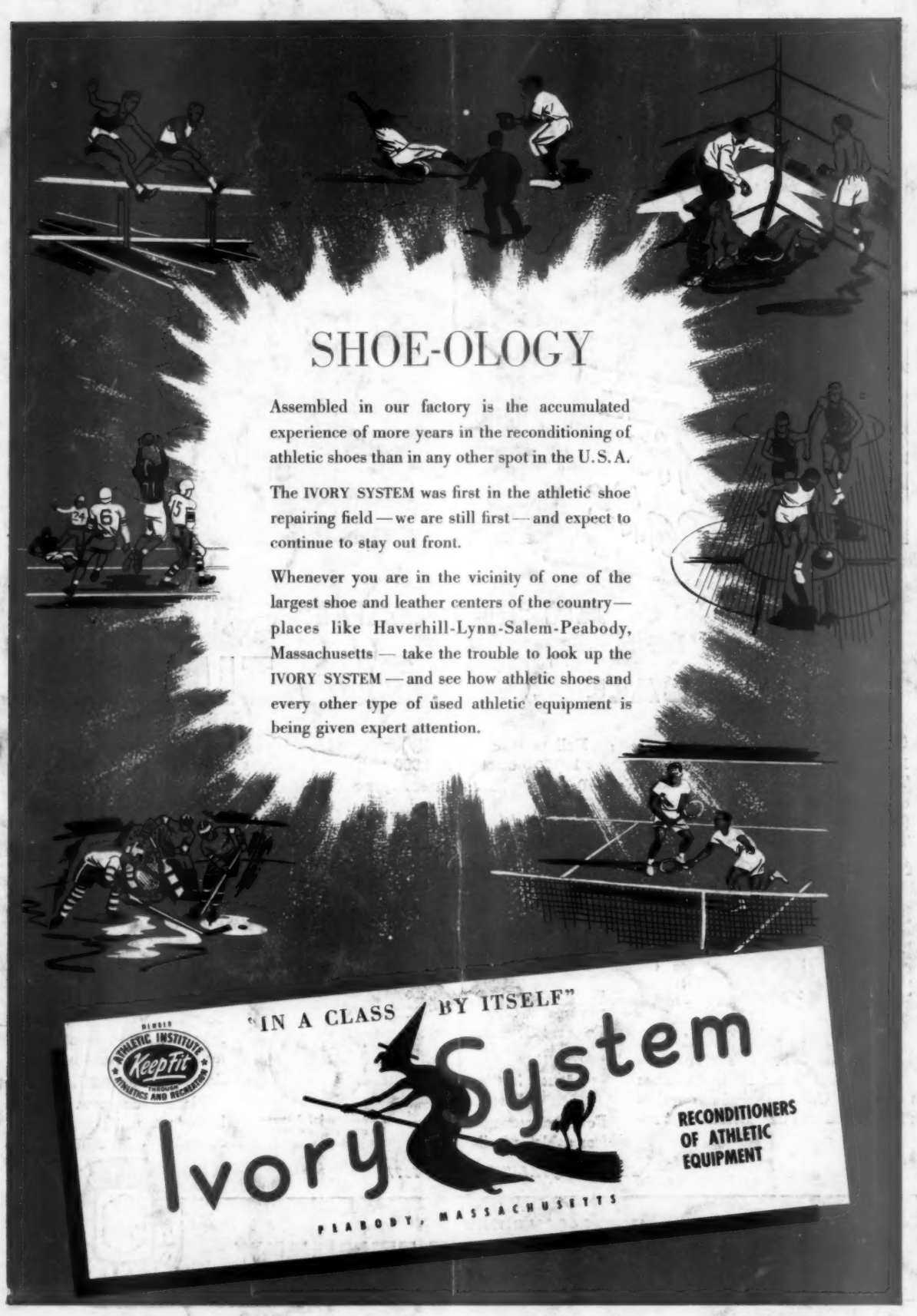
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